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THE RUBBER AGE

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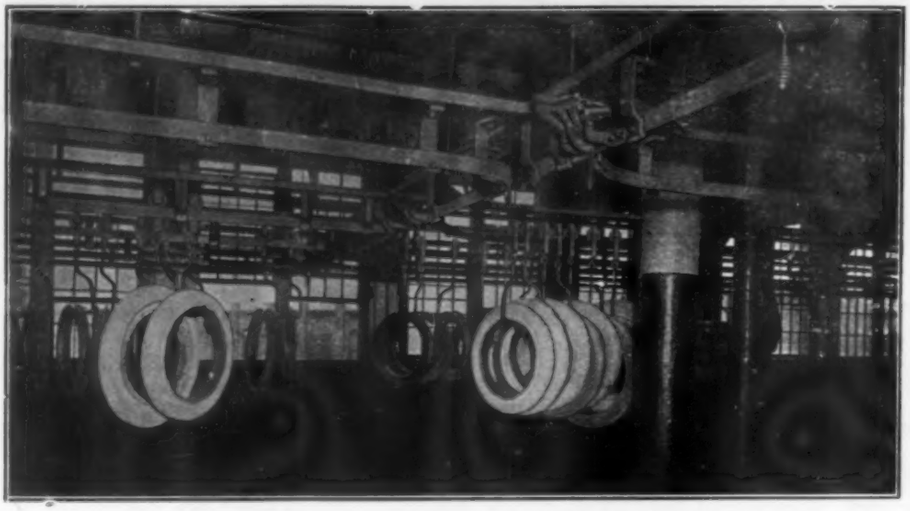

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The Rubber Position

By C. F. Bodde

Translated from the Dutch East Indian Rubber Journal

(Concluded from Page 406)

AT their meeting of Aug. 27 last the Rubber Planters' Association tried to shed more light on this phenomena which had been noticed comparatively recently here and there.

The reason was suggested by various members present as being too close planting or too late thinning out, exhaustion of the trees, overtapping, the effects of wash, and bad bark renewal.

Whatever it may be, the backward tendency of the productivity appeared to have been fairly generally noticed.

Entirely in agreement with these remarks is the line of acre-figures for the six-year age, which as we see is much more stretched out than the two preceding ones, and like the former points to a figure that must lie between 305 lb. and 325 lb.

This being so, and setting the maximum production, very conservatively, at 400 lb. per acre (thus 85 lb. above the supposed balance point) the final figure must, if not so great, then lie considerably below that figure.

In conclusion it appears clear from the above that the world's planted acreage as a whole is considerably less productive than from the figures of most Java estates one would deduce, which is a pleasing phenomenon, because for an estate that on an average produces not more than 300 lb. per acre, = 240 kilos per bouw, the position appears very comfortless, with prices at less than 10d. per lb.

Fortunately this average of the world's planted acreage is exceeded by most Ned. Indies' estates at six years of age (two full years after coming into tapping).

The scope of this article does not admit of enumeration of all the considerations and deductions which come into play in the search for standard yields at the various ages. Still, from the above details, taking into account the natural increase as the different plantings become older, with the necessary adjustments, the following scale can be drawn up, which as we shall see agrees marvellously with the productions during the last four years:—

At the age of Years.	Per acre. lb.	Per bouw. kilos.
5	100	80
6	180	144
7	260	208
8	300	240
9	335	268
10	375	300
11	400	320
12	400	320
13	320	256
14 and older	270	216

A complete scheme for calculating the world's crops of plantation rubber during the years 1917-1926 can be compiled as shown hereunder:—

	100 lb.	*180 lb.*	*260 lb.*	*300 lb.*	*335 lb.*	*375 lb.*	*400 lb.*	*320 lb.*	*270 lb.*	*Total.*	*Tons.*
1917	312,000	382,800	261,400	173,800	180,800	176,550	330,000	—	—	478,982,250	213,831
1918	204,400	312,000	382,800	261,400	173,800	180,800	346,550	160,000	—	570,391,000	254,640
1919	159,300	204,400	312,000	382,800	261,400	173,800	357,350	170,000	160,000	641,966,000	286,592
1920	112,700	159,300	204,400	312,000	382,800	261,400	354,600	176,550	330,000	700,387,000	312,673
1921	165,200	112,700	159,300	204,400	312,000	382,800	435,200	180,800	506,550	756,318,500	337,642
1922	152,400	165,200	112,700	159,300	204,400	312,000	644,200	173,800	687,350	806,422,500	360,010
1923	148,600	152,400	165,200	112,700	159,300	204,400	694,300	261,400	861,150	843,148,000	376,406
1924	150,800	148,600	152,400	165,200	112,700	159,300	516,400	382,800	1,122,550	860,648,500	384,218
1925	110,000	150,800	148,600	152,400	165,200	112,700	363,700	312,000	1,505,360	871,839,400	389,214
1926	—	110,000	150,800	148,600	152,400	165,200	272,000	204,400	1,817,350	881,484,500	393,520

In comparing the calculated crops with the actual productions, it must be borne in mind that:—

Firstly: The figure from Rickinson's statistics for 1918 must be increased by 53½ tons, and that for 1919 decreased by an equal amount, because approximately this quantity of the 1918 crop was only shipped in 1919.

Secondly: In September, 1920, a voluntary crop restriction of 25 per cent was adopted by the majority of the members of the R.G.A. and International.

We shall not be far from the truth if the reduction due to this restriction is set at about 2½ per cent of what without restriction would have been harvested during the whole year.

Thirdly: It is supposed that the present depression has checked the extension of the world's plantings in 1921, so that the production of 1926 will not include any plantings at 100 lb. per acre.

The comparison shows that:—

For 1917 calculated crop 213,831 tons, and actual crop 213,070 tons
For 1918 calculated crop 254,640 tons, and actual crop 254,450 tons
For 1919 calculated crop 286,592 tons, and actual crop 286,725 tons
For 1920 calculated crop 304,856 tons, and actual crop 304,816 tons

The greatest deviation between the scale and the reality is found in 1917 and the smallest in 1920, while the calculated quantity for the four years taken together does not even amount to a full one per mille more than the actual production of plantation rubber.

The scale agrees for the year 1917, when the productivity of the entire world's plantings had still an upward tendency, just as well as for the year 1920, when already nearly one quarter of the plantings were on the backward grade.

As far as is known shipments during the first half of this year amounted to:—

	Tons
Straits Settlements	44,000
Federated Malay States	41,000
Ceylon	20,000
Java	15,000
Sumatra	10,000
Total	130,000

while the scale, taking into account the crop restriction, suggests for the current year a production of 253,232 tons.

The voluntary crop restriction will thus apparently not effect a decrease of 25 per cent of the whole production.

On the one hand the scale, as appears from the above, can claim sufficient accuracy, for practical purposes, and on the

other hand this usefulness bears witness to the accuracy of Rickinson's statistics, from which it was developed.

Wild rubber (Brazilian and African) has already for some time shown a very gradual backward tendency.

During the first half of 1921 the arrivals at Para amounted to under 11,000 tons, against over 17,000 tons for the previous year, and therefore for the current year the production of wild rubber may be estimated at certainly not more than 25,000 tons.

The production before the war amounted to about 60,000 tons, and in 1920 had already declined to below 40,000 tons.

In the beginning of 1914, when there were still no rumors of war, Mr. Akers called the then prevailing price-level for Brazil a crisis, and yet in that year the quotation for hard Para never went below 2s. 6d.

Indeed with a daily wage of 7s. (which in the meantime has probably increased considerably, as elsewhere) and with a then cost price of 2s. 4d., it is to be wondered at that Brazil has been able to presevere so long, and it can therefore certainly for the near future be counted on for a low production.

Everything considered, the future total world's crops under normal conditions and without restriction may be estimated at not more than:—

	Plantation Rubber. Tons.	*Wild Rubber.* Tons.	*World's Production.* Tons.
1921	337,500	25,000	362,500
1922	360,000	20,000	380,000
1923	376,500	18,000	394,500
1924	384,000	15,000	399,000
1925	389,000	15,000	404,000
1926	393,500	20,000	413,500

This then is the conclusion that the imaginary manager mentioned in the beginning has formed of the behavior of the world's planted acreage entrusted to him, thereby answering the first half of the question, and the second factor affecting the position must then be considered further.

In the same way as was the case with production, the figures of the past permit of some conclusions respecting the present and the future with regard to consumption, as long, of course, as no unforseen circumstances make their influence felt.

It is a commonly known phenomenon, that the very first symptom of an approaching over-production of any unmonopolized staple article may lead to a drop in price out of all proportion to the increase in production, as there immediately commences a struggle among the producers to out-do one another in the race for buyers, and the prices which arise therefrom quickly govern the market.

If one reflects that at the present time a cost price of 1s. per lb., even for the dearest producing country, may be considered high, and the price-level for plantation rubber up to May of last year never went below double that cost price, one may safely conclude that until the middle of 1920 there can have been no talk of a surplus caused by over-production or under-consumption.

But accepting this, the logical conclusion cannot be avoided that consumption must have been able to absorb the entire production, averaging over 1917-1919 almost 300,000 tons per annum.

For 1920 the most competent insiders put the consumption at 310,000 tons, thus 45,000 tons more than given by the American statistics, first brought forward by Dr. Hierneiss.

Allowing about the same difference for the current year, the consumption in 1921 should be 295,000 tons.

It appears that the rubber-consuming world, outside America, notwithstanding the world depression, will use during the current year about the same quantity as in 1920, and as the economical situation in the New World, in so many respects, is more favorable than in Europe, some doubt is permissible in respect to an estimate that calls for a decrease there of 30 per cent in the consumable rubber during the same period.

As in six years' time (1914-1920) the world's consumption increased four-fold, for the future an increase of 25,000 tons (under 10 per cent) per year can certainly reasonably be expected, especially if one reflects that the present price-level brings rubber within the reach of industries which until now have been restricted to the handling of raw materials of lower quality.

The argument that the great increase in the consumption since 1914 has been abnormal, and caused solely by the extraordinary requirements for war purposes, is stultified by the facts, the later peace demands far exceeded the war requirements, and this factor is of greater importance if it is considered that since the Armistice large Army supplies became available for peace purposes.

On the strength of the above I venture to estimate the world's requirements of raw rubber as follows:—

300,000 tons for 1921
325,000 tons for 1922
350,000 tons for 1923
375,000 tons for 1924
400,000 tons for 1925
425,000 tons for 1926

It would be absurd to close our eyes to the fact that the position of rubber is depressed by world stocks which before the middle of 1920 were considered not to exist, but as regards the quantity of these stocks there are, as we have seen, no figures which are generally acknowledged as correct.

It is, however, more than probable that the credit policies of the banks, both in Europe and in America have contributed to making "visible" the stocks which had hitherto been "invisible."

There can be no doubt that this, together with the decreased imports into America (a consequence of the same cause) has had a great effect in creating the impression that "the moment of over-production of rubber prophesied years ago has arrived, an over-production which did not manifest itself earlier owing to the war, which devoured rubber," as the situation is seen by Mr. Van Gennep.

In this connection we could again put the question, where and when has that unconsumable surplus, which is put at 350,000 tons by Dr. Hierneiss, originated?

Messrs Harrison and Crosfield have expressed the opinion, in their well-known letter of August 31 last, that until 1919 consumption kept pace with production.

Further, this firm, whose authority certainly cannot be doubted, estimate both factors as follows:—

	Production. Tons.	*Consumption.* Tons.
1919	343,000	330,000
1920	370,000	310,000
	713,000	640,000

which gives at the most a surplus of 73,000 tons, and they also expressed the expectation that this year the restricted production would probably be entirely absorbed.

• • • •

Condensing the foregoing, the following idea of the future develops:—

	Production Tons.	*Consumption.* Tons.
1922	380,000	325,000
1923	394,500	350,000
1924	399,000	375,000
1925	404,000	400,000
	1,577,000	1,450,000

Thus an over-production in four years of 127,500 tons.

Accepting the surplus at the end of 1921 estimated by H. and C. at 73,000 tons, this would thus increase to roughly 200,000 at the end of 1925.

There is no object in making estimates for the more distant future, as in the meantime too many unforseen circumstances may occur that would make any calculation of problematical value.

The following observations will therefore suffice:—

(1) The present situation, as we have seen, with crop restriction until 1926, would steadily become more critical, and must of necessity stand in the way of extension of the world's planted acreage.

(2) The acre-figure for the five-year age, which can be put at 292 lb. for 1926, will for the four or five following years undergo little or no change, as the increase in productivity of the younger plantings will balance the decrease in the production figures of the gardens which have passed the turning-point.

(3) If the planted acreage remains the same (leaving out of consideration the doubtful abandonment of existing plant-

ings) and the productivity is stable, the world's crops of plantation rubber would be constant, and would remain at something below 400,000 tons per annum.

(4) Rubber from other sources, already of relatively little importance, can under these unfavorable conditions be safely ignored.

(5) Improvement in the statistical position can thus only be expected from an over-consumption above 400,000 tons per annum.

(6) Assuming an increase in consumption of 25,000 tons per year, it will take until the middle of 1929 before the surplus of 200,000 tons at the end of 1925 is worked off.

(7) After that comes a sudden and very critical change, as the consumption in that year exceeds the production by not less than 100,000 tons.

And herein lies the justification of the existence of the aforementioned rubber trees, although somewhat late, still sufficiently proved, even though on other grounds than those contained in the credentials which Dr. Hierneiss gave it.

* * * *

The actual rubber situation can be formulated as follows:—

The present planted acreage is not too great for the more distant future need of rubber, but the speed at which the extensions took place was too quick, for which reason the regular increase in consumption could not keep pace with it, and from 1920 to 1925 will get so far behind that thereafter, though exceeding the production, it will require another five years before the surplus accumulated in the interval can be absorbed.

When viewed in this light a temporary restriction of crop is not in any way patch-work to keep weak producers artificially on their legs, as opponents of this measure contend, but much more a prudent and far-seeing method of regulating the temporarily disturbed balance between supply and demand, in favor of the producers now and of the consumers later on.

Conclusion

If it were possible to persuade the members of the Rubber Growers' Association and International, who agreed to a restriction in their crops of 25 per cent until the end of 1921, to continue this agreement for the next two years, it would soon be apparent that the disturbing surplus, which at the moment presses like lead on the rubber position, would turn out to be a chimera.

The near future would then have the following aspect:—

	Tons.	Tons.
Surplus at end of 1921		73,000
Estimated production, 1922	380,000	
25 per cent restriction plantation rubber	90,000	290,000
		363,000
Estimated consumption, 1922		325,000
Surplus at end of 1922		38,000
Estimated production, 1923	394,500	
25 per cent restriction plantation rubber	94,125	300,375
		338,375
Estimated consumption, 1923		350,000
Estimated shortage at end of 1923		11,625

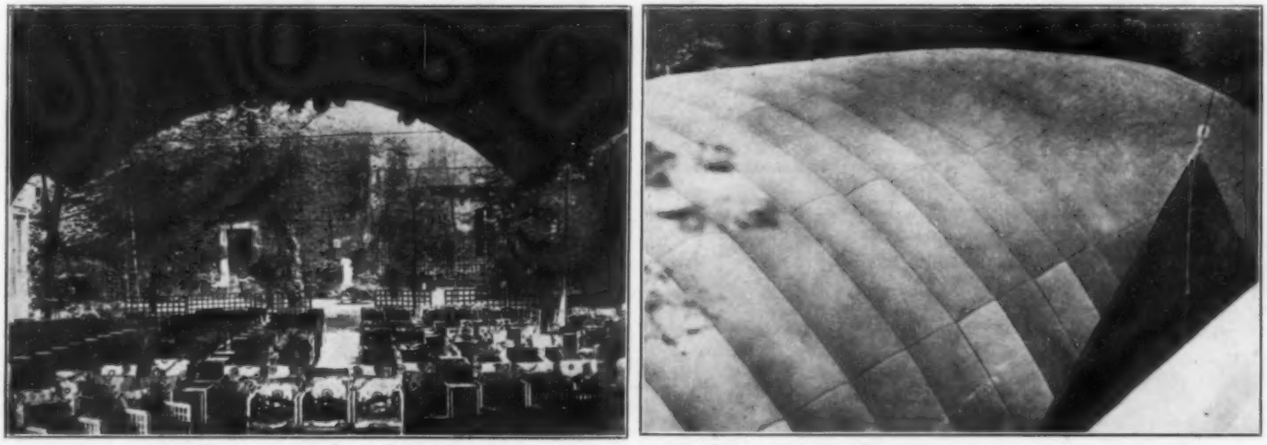
A decrease of about 50 per cent in the surplus in one year would certainly not take place without a very distinct effect on the course of prices, probably even a long time before the favorable turn in the statistical position became an established fact, the more so as a coming shortage would begin to cast its perspective shadow, or rather its light, far ahead.

A Rubber Resin Composition

Artificial resins are made by the condensation of phenol with formaldehyde. These are of many kinds and possess many variant properties. The resin belonging to the plastic class, either fusible or soluble, may be added to rubber in the mixing rolls, according to British Patent No. 171,803, assigned to the India Rubber, Gutta Percha and Telegraph Works of London. The subsequent treatment of the mixture is such that the resin does not become non-plastic. Commercial carbolic acid is mixed with an equal volume of formalin, the 40 per cent product, and with five per cent ammonia. The mixture is heated until the reaction commences and the temperature is maintained at about 80 degrees C until a plastic msas results. Twenty per cent of the mass is mixed with 40 per cent of rubber, 7 to 8 per cent of sulphur and the usual fillers. The composition is then vulcanized for two hours at a temperature of 280 degrees C. At this temperature the condenstion product is not converted into the hard infusible variety.

Cold Vulcanization of Rubber

French Patent No. 517,145 is concerned with a process of vulcanizing rubber in the cold. The rubber is first well washed in benzine and then vulcanized at a temperature of 28 degrees C with the aid of a sulphumate.



Photos Kadel & Herbert

A New Use for Rubber — the Only Pneumatic Roof in the World

On the left is shown an interior view of a rubber roof, designed by Paul Poiret, noted Fashion artist, in use at his outdoor theater, *Oasis*, in Paris. The roof is not used in fine weather but if it rains, is inflated. The illustration on the right is a section of the rubber roof, showing details of its construction.

Unnecessary Milling

What it Does to Rubber and the Factory.

By Arthur E. Friswell

IN many rubber factories, mixing mills and calenders seem to have been accepted as a legacy, regarding which the last word has been said, and little or no attention is given to what they do and fail to do to the working and life of rubber, subsequent to the punishment which they inflict.

Unfortunately, the necessary operations of breaking down, mixing and calendering rubber, are all partly destructive of its lasting elastic quality, which subsequent vulcanization cannot completely restore.

Some years ago I was in charge of a large factory in this country when increased output was demanded and new mills had to be bought. Although at that time my practical factory experience had covered over twenty years, I had given no more thought to the action of mills and calenders than many seem to give now, but had made the best of what existed and considered it good enough; but the engineer and master mechanic of the shop, although not then familiar from actual experience with rubber working, was observant of lost motion, as a good mechanic should be, and he had studied particularly the ratio of gears and the speed of rolls. He had noticed the shock to his engine and the cost of his power bill when certain machines were thrown on, and how some machines consumed much more power than others while producing no more and in some cases less. He so interested me in the subject that before ordering new mills I authorized him to experiment with speed and gears to suit his own ideas and placed a competent mill man to observe, cooperate and report.

I was agreeably surprised at the results obtained, and here make public acknowledgement of my debt for valuable experience gained to John Shea, who was the engineer and master mechanic referred to, and who has, since, most deservedly, risen to positions of greater responsibility and usefulness through the continued exercise of his natural faculties of shrewd observation, originality of ideas, and love of hard work. (Mr. Shea is now vice president and factory manager of the Providence Rubber Company, Providence, R. I.)

By *slowing* the speed of mixing mills, and particularly by *cutting down* the ratio of speed between the rolls, several important results were obtained:

1. The batches were broken down and mixed in considerably less time.
2. The mixing was much more thoroughly done and much more uniform.
3. It was proven that several stocks desirable in finished articles which, it had been reported, were too difficult and too expensive to mix because they set up such friction as to overheat the mills, burn the batches, and even sometimes, break the gears, could be mixed quite readily.
4. There was a marked increase in the calendered output due to easy, smooth sheeting out, or frictioning, of hitherto troublesome compounds.
5. A decided improvement resulted in uniformity of vulcanization, greater freedom from blisters, blotches, soft and hard areas of cure and much more satisfactory chemical and physical tests of the finished goods.
6. There was a consequent improvement in the general temper of the foremen and workpeople, that most important though intangible factor in efficient operation, with the word EFFICIENT in capital letters. There was less snarling and bickering and "passing the buck."
7. The master mechanic was delighted with the smoother running of his power plant, and the reduction in his bills for fuel and maintenance.

In this article I do not intend to go deeply into technical figures, but to confine myself more especially to the ratio of gearing. Whereas, before the new mills were ordered and installed, the gearing of mills and calenders had been anything which seemed to strike the fancy of the builders, and was, *in every instance,* in excess of the ratio actually needed; it was proved conclusively by preliminary experiments, and subsequently by the operation of the new mills that given an equal diameter of front and back rolls, a difference in gears of one to two teeth only provided all the frictioning grip necessary to draw in smoothly, evenly and *without slippage,* the batches of crude rubber for breaking down, compounding and warming for the calenders, and that a greater ratio of gearing defeated its object by causing slippage and overheating, caking the powders, and wasting time and power.

There was not much difference in results between the use of a difference of one and two teeth in the gears, and a difference of two teeth was settled upon for the new mills.

Now this question of gearing does not at first appear to amount to much, but if those interested in mill room work in the many plants I have visited during the past three or four years will take the trouble and go to the comparatively slight expense of changing the gearing of one or two mills to start with, and so mark the batches that the resultant operations and finished results can be distinguished from the regular run, I am sure there will be further changes in this direction. The same thing holds good with calender gearing.

It is well known that friction motion must be employed for many stocks, but excessive friction often does more harm than good, and frequently for other stocks, where it is thought that friction motion must be used, an even motion will do just as well and will largely reduce the uneven physical test results of tensile, elongation and permanent set between samples cut lengthwise or crosswise of the sheet.

I have been interested and somewhat amused in reading the technical articles which have recently appeared in trade journals in this country and abroad regarding this difference in tests between length and width of calendered sheets, by a recrudescence of that old shopworn term "grain in rubber" and the freedom from it in tests made from rubber forced through a tubing machine.

The difference is largely a matter of tension, set up partly by the frictioning action of the rolls, partly by the stretch afterward applied by rolling up or winding the stock and permitting the stock to remain under tension until cool and set.

This so-called grain, or really tension, can be largely eliminated by allowing the sheet to sag and recover immediately as it leaves the bite of the rolls, and prior to winding, and particularly *by preventing contact with a chilled bottom calender roll.* This roll seldom needs to be chilled anyway, and aside from setting the tension, such contact is very apt to cause bloom and loss of requisite working tackiness to the stock.

Where it is desirable to secure absolute uniformity of stretch, tensile and recovery between length and width, or in other words uniform plasticity, the old-fashioned way of shrinking the sheet by passing it *loose and sagging* through hot water is about the simplest cheapest way of doing so.

There are many ramifications of this subject, all important, but this article is enough for the moment, and may bring about some useful discussion.

Rubber Insulation for Refrigerators

This is a new use for rubber, which has been developed by the National Physical Laboratory of Great Britain. The rubber which is used for this purpose is a very porous product, made by vulcanization under a pressure of 100 atmospheres. The refrigerating chambers are lined with this sponge rubber. It has been found that the amount of heat which radiates through such double walls filled or lined with rubber is only half as great as that which passes through cork walls or other heat insulating material. The weight of the rubber used for this purpose is only half the weight of the cork.

ABSTRACTS

Technical — General — Commercial

Rubber Paving Composition

Rubber blocks have been used to pave streets and the results that have been reported so far seem to indicate that the use of rubber for this purpose is bound to increase and to play an important part in rubber economy by opening up a new field for rubber which has the distinction of being one that is potentially able to absorb large quantities of the gum. In United States Patent No. 1,395,396 there is described a process of making a composition, containing rubber and bituminous materials, for use in making rubber pavements in various ways. In view of the agitation that is going on at the present time along these lines, this patent is of more than passing interest.

It is well-known that rubber in the state of solution in gasoline can be combined with bituminous substances to form a sticky mass which can then be agglomerated by simple compression. This process, however, possesses very important defects which tend to detract from the valuable qualities that a properly compounded rubber-bitumin mixture possesses. The rubber does not diffuse uniformly throughout the asphalt, its properties are altered, especially its glutinous character. Furthermore the dissolving action of the solvent on the asphalt is slow and the loss by evaporation of the same is very high due to the solvent being distributed throughout the mixture over a large surface area. The net result is that only a very limited amount of the rubber can be incorporated in the asphalt under these conditions, not more than 30 to 40 grams per 100 kilograms of the asphaltic powder. Even then the compound is not homogeneous and in some cases the asphaltic powders do not mix with the rubber at all.

The process under consideration permits the asphalt to be prepared for cold compression and under conditions ensuring the entire incorporation of rubber into the bitumin. All sorts of asphaltic materials can be treated. A colloidal substance is obtained which is indefinitely malleable and compressible and has powerful cohesive properties and a fusion point much higher than that of the asphalt. The composition can be used to pave streets by a method different from those in common use.

The process is based on the use of solvents which dissolve rapidly both the rubber and the asphalt. The solvent composition is made by adding the proper percentage of tetrachlorethane to benzene or toluene, the proportion being 20 per cent for cold preparations and 86 per cent for hot ones. There are two processes which are used in preparing the asphaltic rubber compounds, one used for the application of the asphalt compressed cold and the other for the pouring of the preparation in the hot condition.

In the first process the finely powdered asphalt is introduced into the barrel of a mixer and a solution of rubber in benzene containing 20 per cent of tetrachlorethane. The proportions of the solution are rubber 25 to 50 grams, benezen or toluene 800 cubic centimeters and tetrachlorethane 200 cubic centimeters. This solution is added gradually as the mixing progresses, the operation taking but a few minutes only. The quantity of the solution used varies from 3 to 4 kilograms per 100 kilograms of the asphaltic powder. Weak solutions are mixed very rapidly but when working with thick solutions it is necessary to effect the first impregnation with a light solution which facilitates the absorption while softening the asphalt. The mixture is removed from the mixer and spread out in a bed of uniform thickness on a concrete or cement foundation covered with liquid cement. The material is compressed with a roller the pressure being regulated to 300 kilograms per square centimeter of surface.

In the process of making the rubber-bitumin composition which is to be used in the hot condition the rubber solution contains 50 to 75 grams of the rubber to 140 cubic centimeters of benzene or toluene and 860 cubic centimeters of tetrachlorethane. The bitumin is melted at a temperature slightly above its fusion point and then poured in a fine stream into the cold rubber solution with constant agitation. This bitumin-rubber mixture is then brought to a temperature of 100 to 120 deg. and plastic asphalt is introduced and the temperature is raised to 150 to 180 deg. C. The mixture is then ready for use. It can be added to sand or gravel. It can also be used pure. In that case the paving compound is poured hot. It finds special application for paving terraces, bridge heads, etc., which must be elastic and at the same time absolutely water-proof. Bitumin-rubber can also be used for making bituminous concretes or asphalt-macadam.

Removing Rubber Goods from Molds

One of the main difficulties that have to be overcome in the manufacture of molded rubber goods is the sticking of the finished, vulcanized article to the walls of the mold. A well-known method of avoiding this is to make the mold in several parts, even in the case where the shape of the article may allow the use of a single mold in one part. The result is a considerable increase in the cost of making the mold. Such is the case particularly in molding tire-bands. In the building up of tires in the flat, prior to their being shaped to receive the inner tube, the bands are molded in a mold which takes the shape of a drum, having channels in its periphery, corresponding to the shape of the tire band. Pressure is applied during the vulcanization and after the process is ended, it is found quite difficult to strip the tire from the mold. The invention in question, patented in United States Patent No. 1,389,898, has for its object the alleviation of this peculiar condition.

The mold is pierced with an opening for the application of suction. After vulcanization has taken place, a vacuum is created within the chamber of the mold and the rubber article is drawn away from the sides of the same. While the invention has a particular application in the manufacture of heavy tire-bands which are especially troublesome in that they adhere very tightly to the mold after vulcanization, it may be applied as well to the manufacture of all sorts of molded rubber goods.

Vulcanization with Multiple Accelerators

The well known German dye concern, Frederick Bayer & Co. has been working in the past to a considerable extent with vulcanization accelerators. Patents have been taken out on processes in which amines or ammonia compounds of either an aliphatic or aromatic nature, the sulphate derivatives of aliphatic or aromatic amines, metallic oxides or superoxides have been used as promoters of vulcanization of raw rubber, regenerated rubber and synthetic rubber. It was then further observed that when all these compounds were combined and mixed with the rubber and the mixture then vulcanized, a product was obtained which possessed the combined advantages of the products which were obtained by the use of each ingredient separately. In other words the use of multiple accelerators and improvers of vulcanization yielded results which could not be obtained by the use of the individual ingredients alone. This process is patented in Germany. (see German Patent No. 345,160). A sample composition contains 100 parts of raw rubber, one part of aniline sulphate, 10 parts of diethyl aniline, 15 parts of antimony pentoxide and 4 parts of sulphur. The mixture was vulcanized for a half an hour under a pressure of three atmospheres.

Onazote: New Uses for Rubber

By Charles L. Marshall

IN seeking a solution for the difficulties which confront them today rubber producers have rightly devoted much attention to the development of new uses for rubber.

Such measures as restriction of output and reduction of supply are at best temporary palliatives, and a real and more lasting solution is more likely to be found in the observance of the economic laws of supply and demand. Any artificial interference with supplies, while temporarily benefiting the producer, may easily lead to speculation, and will certainly cause market fluctuations, which would be highly disturbing to the interests of the manufacturer. High prices in the past due to speculation, have left their mark in the memories of the manufacturer, and it is in the interests of both the producer and the manufacturer that some degree of stabilization in the price of the raw commodity should be established. With the prospects of an assured economic price before him, the manufacturer would have no fear in launching out into new activities, and embarking upon mass production. The result would be a largely increased activity among manufacturers resulting in a greater output of raw rubber, the immediate effect of which would be establishment of a safety condition or a steadiness in prices which would be of a permanent character.

The manufacturing industry of this country has not increased as it should have done. Manufacturers have been engaged in producing a multitude of specialities in limited quantities at good prices, and have established a permanent outlet for a limited amount of rubber, but only with an enormous investment of capital; hence, the grower and manufacturer are both in the same cart. Therefore, steadiness in prices is essential to any large and permanent increase in manufacture.

The present manufacture of rubber is devoted principally to economic uses, such as motor tires and the like. What is now needed, in addition to the above, is a beneficial utility of large scope for rubber which will form the most profitable outlet for the over-supply, and not interfere with present production, and can be readily increased, when needed, by propaganda.

This form of manufacture has always been in the writer's mind—a manufacture which requires much less than the usual machinery and labor for its production, giving a product which is of nearly pure rubber character, and will be cheap to the user.

At the recent Rubber Exhibition, Onazote (Onazote, Ltd., 5, Idol Lane, London, E.C.3), a product of an entirely new character, was introduced.

This invention has been described in many papers, and is, briefly as follows:—

A vulcanized rubber product, highly expanded by gas under pressure, which gives the lightest solid that has so far been produced of an anti-sponge nature. A cubic foot of this material weigs from 3 lb. to 7 lb. It is capable of being compressed, and has a recovery almost equal to that of air. It is three times more buoyant than cork. It is non-absorbent, and impervious to water.

It is the best-known non-conductor of heat and cold. It can be made into any required formation, and is of an easy form of manufacture.

Numerous tests of a searching character have been in progress for many months past. Some of these have been made by the National Physical Laboratory, others by the well-known firm of David Kirkaldy and Son. Space does not permit of their detailed publication, as they are of a voluminous character; but the following is an example of some compression tests.

A 4 in. Onazote ball, weighing 4 oz., resiliently supported a load of 32,000 lb., when compressed to a thickness of a ¼ in. Several discs of Onazote, aggregating 3 in. in thickness by 4 in. in diameter, supported a load of 14,500 lb., when depressed to a thickness of 1/3 in. When the load was released the recovery was complete—an action approaching the properties of air.

Among some of the tests made by the National Physical Laboratory in connection with heat insulation the following has been reported on Onazote to the Food Investigation Board, and published by them (Dept. of Scientific and Industrial Research, Food Investigation Board, Special Report No. 5, Report on Heat Insulators, Published by H.M. Stationery Office, 1921):—

Conclusions

(1) From a study of the data, contained in the foregoing tables it will be observed that cork, slagwool, charcoal and wood fibers, when of good quality and dry, have practically the same thermal conductivity, viz., 0.00011 gm. cal. per sec. per cm. per 1 deg C. (= 0.35 B.T.U.'s per sq. ft. per hour for 1 in and for 1 deg. Fahr. diff.); judging from the fact that such entirely different materials are about equally good as insulators, it would appear that their resistance to conduction is not very far from the limiting value that is practically obtainable by subdividing the air space. In this connection it is interesting to note that still air has a thermal conductivity of only 0.00005 C.G.S. units (= 0.14 B.T.U's per sq. ft. per hour for 1 in. and for 1 deg. Fahr diff.), or barely half that of the best of these materials, so there is still a margin for improvement by finding a more suitable material in cellular form

Different brands of cork, etc., vary slightly in their efficiency as insulators, but it may be stated as a general conclusion that with samples of good quality such differences are not very considerable, and the extravagant claims which are sometimes made in advertisements by vendors of insulating material are devoid of foundation.

(2) It is clear that the thermal conductivity of materials in general, such as cork, is not an invariably physical constant like the thermal conductivity of pure metals. It follows that it is advisable to test samples of various consignments just as it is desirable to determine the calorific value of a fuel or any other commercial commodity.

(3) Materials that are liable to deteriorate in use decrease in efficiency as insulators, and in consequence of such change, and the tests, indicate that the decrease may be quite considerable.

(4) Coarse granular materials permit of the circulation on convection currents in the material which complicate the phenomenon of the heat transmission.

Supplementary Notes

Since the above report was written another material of great promise has been brought to the notice of the committee. It consists of rubber expanded by gas into a highly cellular form. When viewed under a low-power microscope the material shows a structure made up of minute cells bounded by rubber mebranes. This results in an exceedingly light solid of density varying from 0.059 to 0.12 (3.7 lb. to 7.5 lb. per cu. ft.). The air cell structure with thin boundary walls of low conductivity material is the ideal one for heat insulation, and from the results of the preliminary experiments quoted below, it will be seen that the conductivity of this material is about 0.000085, *which is lower than that of cork or any other substance studied in the course of this investigation*, being only one and a-half times that of still air. The practical importance of this result is all the greater from the fact that the weight of the cellular rubber is only about half the weight of an equal volume of slab cork.

A sample of spongy rubber was also obtained, which, it was stated, was used for upholstery work. This ma-

Reprinted from *The Bulletin* of the Rubber Growers Association, Inc. for January.

terial was volume for volume considerably heavier than the cellular expanded rubber. It weighed 14 lb. per cu. ft., and its conductivity was greater than that of cork (0.00013 as compared with 0.00010 to 0.00012 for various samples of cork).

The methods of manufacturing the two materials appear to be quite different. The cellular expanded rubber is prepared by vulcanization under high gaseous pressure, amounting to as much as a hundred atmospheres. The pressure is gradually released during the cooling down stage, and this results in an expansion of the gas distributed through the rubber, giving a very light product. The spongy rubber, on the other hand, is prepared by vulcanizing rubber mixed with ammonium carbonate. On being heated the salt decomposes, and in escaping it breaks a passage through the rubber. This gives a product which is porous and absorbent, in sharp contrast to the cellular expanded rubber in which the cells are unbroken.

Data on Cellular Expanded Rubber

The sample of cellular expanded rubber was hardly suitable for an accurate test, being only ⅛ in. in thickness, and not quite uniform; since, however, no other samples were immediately available, experiments were made on this, which gave the results stated below. The sample of spongy rubber was an inch in thickness. It is hoped to publish further data later.

	Thermal Conductivity.		Temperature Range.					
	Gramme Calories per sq. cm. per sec.	B.T.U.'s per sq. ft.						
Material	for 1 cm. thickness and for 1°C. difference in Temperature	per hr. for 1 in. thickness and 1°F. diff. in Temp.	Cold Face °Cent.	°Fahr.	Hot Face. °Cent.	°Fahr.	Mean Temperature of the Material. °Cent.	°Fahr.
Cellular expanded rubber, density 7 lb. per cu. ft.	0.000085	0.25	17	62	31	88	24	75
Rubber sponge, density 14 lb. per cu. ft.	0.000135	0.377	28	82	42	107	35	95

By these reports one can readily understand the enormous amount of detail work which has been necessary for their completion.

We have now to turn our minds in the direction which will best help the rubber industry, and bring about a greater use for rubber.

Hundreds of Uses for Onazote Suggested

Since "The Rubber Exhibition" hundreds of uses for Onazote have been suggested, and many of them are of a valuable nature. Refrigeration can use some thousands of tons of rubber in England alone. Another single application is for buoyancy work calling for 6,000 tons (six thousand tons) of raw rubber.

Other requests are just as interesting, and suggest to the writer's mind that the use of rubber is only in its infancy, and that there is not a rubber tree too many planted.

This vast amount of rubber can be economically disposed of, and requires no enormous and expensive selling agencies; nor does it require the large capital outlay of the usual manufacture of today.

Onazote, therefore can be made to answer all that the growers are asking for in "New Uses for Rubber." The highly expanded form of Onazote brings it into a field of common use, where quantity is the necessary element. For instance, as a packing material for china, glassware, etc., for shipping purposes. Another vast field is the manufacture of furniture.

Enough work has been completed to show that it is possible to employ usefully and profitably rubber in this direction. The very boxes in which raw rubber is shipped can be made of Onazote.

The Pure Plantation Rubber Products, Ltd.

THE formation of the Pure Plantation Rubber Products, Ltd., in London marks an important development in respect to propaganda which should be of the greatest value in promoting an increased consumption of rubber according to *The Bulletin* of the Rubber Growers' Association, Inc., for January, 1922. It will be recalled that great interest was evinced at the exhibition in crepe rubber soles for sport shoes.

Owing to the untiring enterprise of A. Oliphant Devitt of the firm of Messrs. Lewis and Peat, Ltd., this new use of rubber was brought to the notice of estate managers, shoe manufacturers, and others, and a demand was created. At the present moment there are probably over 2,000 pairs of sample shoes touring the country and abroad in travellers' bags, and orders are being booked for the coming season. This is largely the reason why retail supplies are not available to any extent as yet, as the supply of raw material is not sufficient to cope with the demand.

It may be mentioned here that several manufacturers' travellers have stated that they have booked no orders for vulcanized soles for the coming season, but have taken substantial orders for pure plantation soles. One big firm, when asked to repeat their last season's order for some 10,000 pairs of *vulcanized* rubber soles, replied that they were afraid to do so in view of the results of their travellers' experiences with pure plantation rubber soles; in fact, owing to deterioration they had destroyed several tons of vulcanized soles left over from last year, and did not want to risk a worse catastrophe this year.

In addition, some 500 pairs of shoes have been sent all over the country to tennis and golf players, and they are now in use by professional players in leading clubs, who report very highly upon them. The public schools also have asked for a supply of these shoes, and Eton and Harrow have placed large orders. It might be suggested here that useful propaganda might be accomplished if members who have sons at public schools would supply them with a pair of shoes soled with crepe rubber for gymnasium work, etc.

The result of this preliminary work was the creation of a considerable retail business, which was carried on by Mr. Devitt with great difficulty. It increased to such an extent that a small syndicate of rubber producers was formed, and premises have been opened at 40, Fenchurch Street, E.C.3. The object of the enterprise is to bring before the public articles made of pure plantation rubber, or, in other cases where the use of pure rubber is not practicable, as high a percentage of rubber as is consistent with efficiency.

It is the intention of the promoters to supply only standard rubber articles, and this is certainly a move in the right direction, as once the consumer is assured of the quality of standard rubber commodities the general consumption of rubber must be largely increased.

It is hoped that the premises will become the center for the reception of ideas for new uses of rubber, and also the means of introducing them to the public. A first-class salesman has been obtained and a good supply of goods ordered, and, what is most important, preferential treatment has been assured from the very best shoe manufacturers. The staple product for sale at present consists of boots and shoes soled with pure plantation crepe, and a large stock of sports shoes of every description is on view. These include high-grade hand-made buckskin and brogued leather shoes, canvas shoes and the cheaper plimsolls.

That the crude rubber sole is being viewed with considerable favor by sports shoe manufacturers is evidenced by the fact that already an inferior substitute is being put on the market

by certain firms at home. As has already been stated, it is essential that the rubber used for this purpose should be a hard, close-knit crepe, but certain rubber companies in this country are breaking down old stocks of rubber and rolling it out in imitation of the imported article. The result of this policy is to destroy the "nerve" of the rubber, and to take away the very properties which render it peculiarly suitable for soles. The rubber produced by this breaking-down process is gelatinous, lacks durability and frays at the edges.

The propaganda department is giving full publicity in the technical Press and elsewhere to the introduction of this inferior grade of rubber, and is drawing the attention of the trade to this matter, as the flooding of the market with this imitation product would be most detrimental to the development of this new use for crude rubber, which is so full of possibilities.

Other lines which it is hoped to develop in due course consist of toilet appliances, friction gloves of fine pale crepe, tobacco pouches of a transparent golden color, hot-water bottles, rubber gloves and bathing caps and many others.

"Rubadub" floating toys, which contain 75 per cent to 100 per cent rubber, are a feature of the show; also a new and attractive rubber linoleum in a marbled pattern of several colors.

Supply of Crepe Rubber for Shoe Soles

The attention of estate managers and others is directed to the fact that at the present moment the demand for the *right* sort of rubber for this purpose is in excess of supplies.

The crepe should be of a dense, hard-knit gristly texture, and evenly rolled. This is of the greatest importance, as certain estates have shipped crepe rubber showing variations of nearly ⅛ in. in thickness in the same sheet. This defect renders the rubber absolutely useless for the purpose for which it is intended, and manufacturers will not accept it. The surface should be slightly rough, if possible, on one side only, the other side being smooth in order to take the adhesive solution. The ideal size, which is also the most economical, is 13 in. by 18 in. An alternative size, which can also be utilized, is 26 in. by 9 in.

The sheets must on no account be folded in the case when being packed. The edges should be trimmed and the sheets cut to fit the case, which should be quite full but not pressed. An ideal shipment would consist of 200 lb. of rubber, divided as follows: 10 per cent 3/16ths in. thick, 50 per cent ¼ in. thick and 40 per cent ⅜ in. thick. It is essential that these thicknesses should be strictly adhered to. The inside of the cases should be lined with stout brown or waterproof paper. Some parcels have been seriously damaged by nails being driven through the bands at the sides and right through the rubber.

Mats

Mats of various descriptions, made chiefly of brown crepe with gold standard borders are being sold. They are of suitable sizes for bathrooms, halls, floors, conservatories and also for general use. A small circular mat, about 8 in. diameter ⅛ in thick, for cash or telephone stands, domestic use, etc., is in great demand. Small, oblong mats, 12 in. by 7 in., suitable for running boards of Ford cars, are also being asked for, as well as larger sizes for other cars.

Many estate managers have from time to time made various articles of pure rubber for their own use, and managers are particularly requested to forward to the Pure Plantation Rubber Products, Ltd., examples of anything of interest.

Activities of the Peachey Process Co., Ltd.

One of the most promising of the new inventions featured at the last exhibition was the Peachey Process, according to *The Bulletin* of the Rubber Growers Association, Inc., for January.

Since the time of the exhibition extended experiments have been carried out at the laboratory of the Peachey Company at Willesden, and there is every prospect that the first commercial manufactures of goods treated by the Peachey Process will shortly be placed on the market.

It is proposed to form a company with the object of taking over certain agreements entered into by Messrs. Rowe White and Co., Ltd, and the Peachey Process Company, Ltd., together with certain patent rights and secret processes, including rights for the manufacture in the United Kingdom by the Peachey Process for the cold vulcanization, or "Peachification," of rubber, of articles of crude rubber, floor and wall coverings, reconstituted leather and embossed and soleing leather, and the curing of proofed fabrics. In addition, an exclusive license has been obtained for the use of the Peachey Process in the whole of the Malay Peninsula, the Straits Settlements, and the Island of Ceylon. It is proposed to establish factories in the United Kingdom with plants complete for turning out the above lines on a commercial scale, and also to equip vulcanizing plants for "Peachifying" crude rubber soles, carpets, mats and many other articles in Ceylon and Malaya.

The company also proposes to grant licenses in the Federated Malay States, Ceylon and Straits Settlements to others for the use of the process, and subsequently to form subsidiary companies which will undertake the manufacture of many new and profitable lines, which, it is believed, can be advantageously turned out by the Peachey Process.

Rubber Linoleum—Cost of Production

The following figures, supplied to Messrs Rowe White and Co. by their technical advisers, are based primarily upon the results of the Peachey Company's tests at their laboratory. The following estimate deals with the output of one factory unit costing about £50,000 erected and equipped:—

Output.—Assuming that the calender runs at 15 yards per minute, and allowing for time losses in stopping and starting, removing loaded grids, drawing forward empty grids, etc., it is estimated that 12 layers of material 20 yards long by 2 yards wide can be produced in an hour. Working on a two-shift system of 16 hours per day and 5 days per week, 48 weeks to the year, the output would amount to 1,843,200 square yards per annum.

Assuming that half of the output consists of floor covering and the remainder reconstituted leather, the yearly output of each would be 921,600 square yards. Based on the average wholesale selling price of other floor coverings, 4s. 6d. may be estimated as the average selling price per square yard of floor coverings, and it is anticipated that reconstituted leather will realize an average of 6s. 6d. per square yard. This figure is based on the wholesale price of imitation leather cloth.

Taking these figures as the estimated selling price of the products of the factory, the annual receipts would amount to £506,880.

Estimated Labor Costs.—Average current labor costs are approximately 1s. 10d. per hour, and an additional 2d. per hour may be allowed for bonus purposes; 32 men would be required in a factory of the size suggested, and consequently it is estimated that 480 square yards could be produced in one hour at a labor cost of 768d. per hour, or 1s 6d. per square yard, giving an annual charge of £12,288.

Raw Materials.—It is assumed that the average weight of floor covering is 5 lb. per square yard, and that of reconstituted leather 2 lb. per square yard. Assuming the above rate of output, this represents an annual consumption of 2,880 tons of material.

On the basis of average material containing 50 per cent of rubber, the cost of raw material is estimated as follows: 1,440 tons of rubber at 1s. 6d. per lb., £241,920; 1,440 tons of other materials at 1d. per lb., £13,440.

Vulcanization Charges.—It is estimated that vulcanizing by the Peachey Process will cost 1d. per square yard—annual cost £7,680.

Power.—The estimated cost of 1,000 hp. at 1d. per hp. per hour gives a charge of £16,000. This is based on the estimate from the County of London Electrical Supply Company, Ltd.

Overhead Charges, etc.—Overhead charges, rent, rates, taxes, insurance, management, etc., are estimated at 300 per cent on labor charges, amounting to £36,849, and a further charge is allowed for £5,000—cost of running motor lorries, etc.

The above details indicate an estimated annual expenditure of £333,177, which, applied to the estimated receipts, shows a considerable margin.

The Annual Report of the United States Rubber Co.

The Preliminary Report Reprinted Below was Submitted to the Stockholders on February 17 by C. B. Seger, Chairman of the Board of Directors

UNDER date of Aug. 27, 1921, you were advised as to the results of the Company's operations for the first six months of 1921. As the Annual Meeting of Stockholders does not occur until April 18 next, and the Annual Report will not in the regular course be sent out for nearly two months to come, your Directors feel that, owing to the unusual conditions that have continued throughout the year 1921, the Stockholders should be advised as early as possible of the results for the year and of the Company's position at the close thereof. In order to prepare the statements here following so soon after the close of the year it was necessary to estimate some of the figures, but we are satisfied that they closely reflect the results as they will appear after the accounts have been closed and audited in the usual manner.

The year 1921 was one of readjustment and liquidation, and, therefore, any statement of profits or income for that period would be misleading unless due consideration is given to the conditions which confronted the Company at the beginning of the year, as well as those which developed during the year, and especially to the extent to which liquidation, both as to inventories and financial obligations, has been effected during the year, in connection with operations. The volume of business during 1921 expressed in tonnage or units rather than in dollar volume of sales was satisfactory in view of the general business depression that prevailed practically during the entire year throughout the country, and in fact the world.

As hereinafter explained in detail:

(a) financial obligations, including forward commitments were reduced approximately $40,000,000, all accounts being met at they fell due and full advantage being taken of all cash discounts;

(b) approximately $10,000,000 of excess cost of finished goods carried over from 1920 and sold in 1921, as compared with the average cost of producing similar goods in 1921, was absorbed in the operations for the year;

(c) drastic trade reductions in selling prices, made after January 1, 1921, decreased the amount which otherwise would have been received for the goods sold during the year by approximately $18,000,000, thereby reducing net profits to the same extent;

(d) inventories of materials and finished goods were finally adjusted by further write-down amounting to approximately $18,544,000, and as this was definitely allocated to 1920, $8,011,000 was charged against reserves previously created, and the remainder, amounting to $10,533,000, was appropriated from corporate surplus.

Operations for the Year 1921

The net sales for the year amounted to $164,470,368, being a decrease of $91,679,762, or 35.79 per cent, compared with the sales of 1920, which were the largest in the history of the Company.

After absorbing approximately $10,000,000, representing the excess cost of finished goods carried over from 1920 and sold in 1921 as compared with the average cost of producing similar goods in 1921, but before the adjustment of inventories, all of which adjustment is definitely allocated to 1920 as hereinafter explained, the net profits for the year amounted to $470,817 after all interest and other current charges, notwithstanding a reduction of approximately $18,000,000 in the income from sales, caused by the drastic trade reductions in selling prices made after January 1, 1921.

The absorption of the excess cost of finished goods carried over from 1920, as stated above, resulted from following the established practice of using the cumulative average cost per unit, arrived at by taking the units on hand as of the first of the year and the cost thereof, and adding thereto the units manufactured during the year and the cost thereof.

Inventories of finished goods were not written down as of December 31, 1920, except in special cases of obsoletes, etc., because the selling prices then in effect had produced a satisfactory net profit, and it was believed that substantially such selling prices would be maintained long enough to effect liquidation. This procedure was considered economically sound, not only for this Company, but for industry as a whole.

After the absorption of $10,000,000 referred to above it was found necessary to make further adjustment of the finished goods carried over from 1920, in order to bring them down to sound values, amounting to approximately $5,769,000, of which amount $2,011,000 was charged against reserves previously created, and the remainder, amounting to $3,758,000, was charged against corporate surplus, as being definitely allocated to 1920.

In the case of raw materials and supplies the inventories as of December 31, 1920, were written down to what were then considered fair market prices. This write-off proved to be ample as to all commodities except cotton fabrics. At that time there was no real market for cotton fabrics, and it was necessary to rely upon the best information available. On this basis inventories of cotton fabrics were written down $6,425,000 as of December 31, 1920, which amount was charged against reserves previously created, and in addition $6,000,000 was appropriated from the net surplus for the year 1920 and set aside as a reserve for contingencies.

Throughout the year 1921 the market for cotton fabrics was demoralized. On the basis of replacement values during 1921 it was found necessary to use the reserve of $6,000,000 and to make a further adjustment amounting to $6,775,000, which was charged against corporate surplus, as being definitely allocated to 1920.

Liquidation of Inventories and Liabilities

Total inventories as of December 31, 1921 amounted to $76,691,777, as compared with $123,503,030 as of the first of the year, a reduction of $46,811,253, or 37.90 per cent. Approximately 66 per cent of all the finished goods on hand as of December 31, 1921 was located at the Company's sales branches.

Liabilities were decreased $23,200,000, of which $13,195,000 was in notes payable, $8,930,000 in accounts and acceptances payable and accrued liabilities, including Federal Taxes and dividend provisions, and $1,075,000 in bonds and notes retired.

In addition to the liquidation of liabilities reflected by the balance sheet as indicated above, consideration should be given to contractual liabilities representing forward commitments for raw materials and supplies. Such contractual liabilities always necessarily exist with a going concern, and while it is not customary to take them into account until after the goods has been received, nevertheless they are financial obligations and should be taken into consideration.

As of December 31, 1920 the contractual liabilities of the nature referred to, principally for cotton fabrics, amounted to $24,000,000. All of the materials represented by these commitments (except as to $300,000 worth which has not yet been required were delivered and taken into account during 1921, in accordance with the original terms of the contracts. The corresponding contractual liabilities as of December 31, 1921 amounted to $7,200,000, all of which was at or below current market, and as to quantities covered only current requirements.

This reduction in contractual liabilities represents a further liquidation of financial obligations in the amount of $16,800,000 in addition to the reduction of $23,200,000 in liabilities reflected by the balance sheet, making a total liquidation of $40,000,000 during the year, as previously stated.

Balance Sheet—December 31, 1921

Current assets as of December 31, 1921 amounted to $134,766,062 after writing down inventories and after deducting from accounts receivable an amount considered adequate to cover doubtful accounts. Inventories of raw materials and supplies, including crude rubber as of December 31, 1921 were valued at or below market prices. Inventories of finished goods were carried at the average cost of production, which will produce satisfactory net profits on the basis of prevailing selling prices.

Current liabilities as of December 31, 1921 amounted to $49,232,561. All accounts were met during the year as they fell due, and full advantage was taken of all cash discounts.

The preliminary consolidated balance sheet as of December 31, 1921 of the United States Rubber Company and Subsidiary Companies is given below.

Surplus Account

The Consolidated Surplus as of December 31, 1921 amounted to $30,031,633, being a decrease of $17,293,747 as compared with December 31, 1920. This decrease was made up as follows:

Appropriation of Surplus for further depreciation of Cotton Fabrics on hand and on commitment Dec. 31, 1920 as hereinbefore explained	$6,775,000	
Appropriation of Surplus for depreciation of Finished Goods on hand Dec. 31, 1920, as hereinbefore explained	3,754,114	10,533,114
Sundry charges, less credits, to Surplus, in adjustment of transactions of prior periods, etc.		152,695
Total deductions from Surplus with respect to prior periods		10,685,809
Dividend paid Apr. 30, 1921, on the Common Stock	1,620,000	
Dividends on the Preferred Stock, including accrual of Dividends payable Jan. 31, 1922 (these Dividends being charged against current income of U. S. Rubber Co.)	5,458,755	7,078,755
		17,764,564
Net Income from Operations for the year 1921, after deducting all Expenses and Fixed Charges (and after absorbing approximately $10,000,000 excess cost of Finished Goods carried over from previous year and sold during the year, as hereinbefore explained)		470,817
Net decrease in Surplus		$17,293,747

It should be borne in mind that if the reductions in selling prices and other disadvantages referred to could have been anticipated ,they could have been provided for by appropriation of corporate surplus, applied to the further writing down of inventories as of December 31, 1920, in which event, the final surplus as of December 31, 1921 would have been the same as resulted from the procedure that was followed, as hereinbefore explained.

As indicated by the balance sheet, your Company closed the year in a strong financial condition. Substantial liquidation having been effected, overhead expenses having been reduced to the minimum consistent with efficient operations, and with inventories of finished goods substantially reduced and adjusted on a basis of sound values, and inventories of raw materials and supplies, including forward commitments, on the basis of current requirements, at market prices or lower, your Company is in a strong financial and trade position to meet the future. The results for the future depend entirely upon general business conditions.

UNITED STATES RUBBER COMPANY AND SUBSIDIARY COMPANIES

Preliminary Consolidated General Balance Sheet—December 31, 1921

ASSETS

Cash	$13,816,477	
Accounts Receivable	41,543,883	
Notes and Loans Receivable	2,713,925	
Finished Goods	51,248,659	
Material and Supplies, including goods in process	25,443,118	
TOTAL CURRENT ASSETS		134,766,062
Notes Receivable of Employees given for purchase of Common Stock and secured by such stock	7,129,454	
Common Stock of U. S. R. Co. held under Service Contracts and Agreements	2,305,336	
Securities owned and held in Insurance Fund	2,442,032	
Securities owned, including Common Stock of U. S. R. Co. held by a Subsidiary Company	4,321,969	
Plants, Properties and Investments including Rubber Plantations	185,980,377	
Prepaid and Deferred Assets	4,126,168	206,305,336
TOTAL ASSETS		$341,071,398

LIABILITIES, RESERVES AND CAPITAL

Accounts Payable, including Acceptances Payable for importation of Crude Rubber		$9,517,220	
Accrued Liabilities		3,505,341	
Notes Payable		36,210,000	
TOTAL CURRENT LIABILITIES			49,232,561
U. S. R. Co., First and Refunding Mortgage Gold Bonds due 1947 ($66,551,800 5 per cent and $24,750,000 6 per cent) less Treasury Bonds deposited as Security for: U. S. R. Co. 5 yr. 7 per cent Secured Gold Notes 9,000,000 U. S. R. Co. 10 yr. 7½ per cent Secured Gold Notes ...24,750,000	91,301,800 33,750,000	57,551,800	
U. S. R. Co. 5 yr. 7 per cent Secured Gold Notes, due Dec. 1, 1923		6,000,000	
U. S. R. Co. 10 yr. 7½ per cent Secured Gold Notes, due Aug. 1, 1930		19,800,000	
Canadian Consolidated R. Co., Ltd., 6 per cent Gold Bonds, due 1946		2,600,000	85,951,800
TOTAL LIABILITIES			135,184,361
Reserve for Depreciation of Property and Plant		16,753,482	
Reserves for Insurance		2,975,980	
Reserve for Federal Taxes and other Contingent Payments		1,649,667	
Reserve for Dividend on Preferred Stock, payable Jan. 31, 1922		1,380,000	
TOTAL RESERVES			22,759,129
Capital Stock—Preferred	69,000,000		
less amount held by a Subsidiary Company	3,890,000	65,110,000	
Capital Stock—Common		81,000,000	
Minority—Canadian Cons. Rubber Co., Ltd., Stock		277,000	
TOTAL CAPITAL STOCK		146,387,000	
Fixed Surpluses—Subsidiary Companies		6,709,275	
Surplus		30,031,633	
TOTAL CAPITAL STOCK AND SURPLUSES			183,127,908
TOTAL LIABILITIES, RESERVES AND CAPITAL			$341,071,398

Vulcanizing Rubber with Sulphur Dioxide

S. J. Peachy has just been granted a patent (British Patent No. 172,754, on a process of vulcanizing balata or gutta-percha by exposing the solid rubber in the form of thin film, about 0.2 to 0.3 millimeters thick to an atmosphere of sulphur dioxide for ten minutes. Then the rubber is exposed to air to remove the absorbed gas and then exposed again to an atmosphere of sulphuretted hydrogen for thirty minutes, when the sheet is found to be vulcanized. The same process may be applied to a layer of rubber spread on the surface of a fabric or to an impregnated fabric. The gases may be used in the reverse order. In an alternative process the materials are dissolved in carbon disulphide and then saturated with sulphuretted hydrogen. A solution of sulphur dioxide in benzene is then added and the mixture is stirred and allowed to stand. The vulcanized material sets in the form of a gel from which the solvent may be evaporated. The vulcanized material has an increased tenacity and resistance to heat, but a diminished solubility in solvents of the raw material. For example vulcanized balata and gutta percha are insoluble in chloroform and benzol respectively.

Spongy Rubber

In British Patent No. 172,398 there is described a process for making spongy rubber. This consists in mixing 15 pounds of Para rubber with 15 pounds of reclaimed rubber, 13 pounds of sulphur, 9 pounds of zinc white and 1.5 pounds of magnesium. After the mixture has been thoroughly incorporated, there is added a volatile substance which on evaporation gives the rubber its spongy character. For this purpose there is used a volatile mineral oil, such as petroleum ether. About 10 pounds of the oil are employed to 45 pounds of the rubber composition. The product is then rolled into sheets or placed in molds and vulcanized for about one hour in a steam jacketed cylinder under a pressure of 40 pounds per square inch.

NEWS OF THE INDUSTRY

Rubber Industry said to have Turned Corner

Reports from Many Sources Indicate that Depression is on the Wane—Gradual Improvement in Fundamental Rubber Conditions Evident—Akron Production Increases Continue

Reports from many sources indicate that the lowest ebb of depression in the rubber industry has been reached and that inactivity is on the wane. Business in tires, mehanical goods and footwear is improving. The recently-announced reduction of eight percent in the price of footwear has done much to stimulate business in this line.

According to the *Survey of Current Business*, issued by the Department of Commerce, there has been a continued improvement in fundamental conditions and a spirit of optimism prevails, not only in the rubber industry but in practically every other, which augurs well for the future. It is believed in trade channels that as soon as the period of tax adjustments has passed, there will be renewed activity. This was already evident toward the end of January and during February, especially in the tire division of the industry.

Bankers declare that the rubber industry will make a satisfactory showing during 1922, if a net profit of six per cent is earned. Even conservative bankers believe that this is not only possible but probable.

Rumors of increased tire prices are current throughout the industry, and announcements of an increase in prices by the largest manufacturers are expected momentarily.

Inventories Low

Current inventories are probably the lowest in the history of the industry. Stocks on hand at factories are from ten to fifteen per cent below normal. No tires being manufactured are known to be going into stock.

Production Increases Continue

Announcements by many of the large tire companies that production increases continue have done much to dispel the cloud of pessimism which was obscuring the facts. Even among the smaller companies it has been stated that consumption runs from 100 to 500 tires a day ahead of production. Many of the plants in Akron are working overtime, most are at least working on a basis of one shift a day. It is estimated at this writing that tire production in Akron aggregates 73,000 tires a day. About 24,000 men and women are employed. In this connection A. A. Beery, head of the State-City Free Labor Bureau, announced on Feb. 25 that the unemployed in that city number of 12,000 which is 3000 less than he reported a month ago.

Use of Gasoline Increases

The consumption of gasoline has ever been a valuable index to conditions in the tire industry, and according to statistics compiled by the American Petroleum Institute an increase of 9.1 per cent over 1920 figures is reported for 1921 in eleven states. The B. F. Goodrich Rubber Co., Akron, has compiled figures which show that there are 10,524,395 passenger cars and trucks now registered in the United States, an increase of 13.2 per cent compared with 1921.

Geo. B. Dryden Now a Director of The Rubber Association

George B. Dryden, president of the Dryden Rubber Company of Chicago, who has been appointed a member of the board of directors of The Rubber Association of America, is one of Chicago's leading business men, and a well known rubber manufacturer with which industry he has been connected for the past twenty-five years.

GEORGE B. DRYDEN
President, Dryden Rubber Co., Chicago

He started as a salesman of solid rubber tires for Kelly-Maus & Co., Chicago, afterward becoming secretary and manager of the Imperial Rubber Tire Co., Chicago, which firm was later merged with the Kelly-Springfield interests.

In 1901 he started the Dryden Hoof Pad Company, and in 1910 purchased a factory to start the manufacture of a general line of molded mechanical rubber goods under the name of the Dryden Rubber Company, of which he is now president.

Mr. Dryden is a strong advocate of amateur sports, a superb horseman, a crack shot, a big game hunter of note as well as a billiardist of more than ordinary skill.

Last January he was elected president of the Chicago Athletic Association. At that time the *Cherry Circle*, the official publication of the Association, said of him:

"George Dryden, the popular Evanstonian, who is noted in that beautiful suburb as an authority on fine horses, just as he is noted in the club as a wholesouled enthusiast on athletic sports, not only achieved a personal honor which cannot fail to be satisfying to him, but he gratified the long cherished wishes of a host of friends when he allowed his name to be used and was elevated to the highest position in the gift of the club membership. He takes office without a sense of newness, for in 1914 he was elected to the Board of Directors and during his terms of service thereon has worked actively on practically all the club committees and established a record for thorough-going, conscientious devotion to duty. A member of many other of the leading clubs in and around Chicago, he is wrapped up in the C. A. A., and in the execution of his responsibilities as president may be expected to maintain the traditions of the organization most happily."

Two Rubber Chemistry Fellowships to be Offered

Two fellowships in rubber chemistry will be offered during the academic year 1921-1922 at the Municipal University of Akron through the cooperation of the Firestone Tire & Rubber Co. and the Goodyear Tire & Rubber Co. These fellowships pay the holder $500, and exempt him from the fees of the university.

The fellowships are open to graduates of American colleges under the following conditions: (1) The applicant shall have successfully completed the following under-graduate courses in chemistry; General Inorganic Chemistry, Qualitative Analysis, Quantitative Analysis and Organic Chemistry; (2) He shall be recommended by the institution from which he has been graduated as a student of excellent ability; (3) He shall accept the appointment with the purpose of entering the employment of the company providing the felowship; (4) He shall be exempt from the payment of all fees of the Municipal University and shall devote a maximum of twelve hours a week to service as Instructor or Assistant in the Department of Chemistry.

Those interested may obtain further information by addressing the Municipal University of Akron, Ohio.

Activities of the Rubber Association

Vacancies in Board of Directors Filled—Plan to Compile Monthly Statistics for Reclaimers—Reduce Pacific Coast Import Rate on Crude Rubber

Messrs. George M. Stadelman, F. A. Seiberling and George B. Dryden were elected by the Board at its regular February meeting to fill vacancies in that body. One of the openings was caused by the resignation of E. G. Wilmer, president, Goodyear Tire & Rubber Co. (who was elected in January, 1922), one by the discontinuance of connection with a firm member on the part of J. W. Maguire, and one by the temporary discontinuance of connection with a firm member on the part of F. A. Seiberling.

Mr. Stadelman is vice president, Goodyear Tire & Rubber Co., Mr. Seiberling is president, Seiberling Rubber Co., and Mr. Dryden is president, Dryden Rubber Co. Under the terms of the Association's by-laws, the Board of Directors has the power to make temporary appointments to fill vacancies occurring between annual meetings, such appointments terminating at the following regular meeting of firm members—in this instance, January, 1923.

Plan to Compile Monthly Statistics for Reclaimers

The Reclaimers' Division decided at its annual meeting in January, 1922, that an effort should be made to have the Rubber Association office compile monthly statistics concerning conditions in the reclaiming industry, similar to the data which is compiled by the Association for the tire industry, the mechanical goods manufacturers, the calendered rubber clothing manufacturers and the proofers of automobile fabrics and other waterproofed fabrics.

A program has been outlined to members of the Reclaimers' Division which calls for their reporting each month their inventory, production and shipments of reclaimed rubber, in pounds, and the inventory of scrap rubber, and the amount of scrap consumed, in pounds. As is the case with most of the statistical work done by the Association, grand totals will be supplied only to those companies who participate in the report. No individual data is exchanged between companies and the monthly report of each company is returned when the statement of totals is sent them. A code is used so that the name of the company need not be associated with its report.

Several members of the Division have indicated their willingness to proceed with the work and it is expected that a sufficient proportion ot the remainder of the Division will also decide to participate in order that the work may be started in the immediate future.

Reduce Pacific Coast Import Rate on Crude Rubber

The Associations' Traffic Committee has been negotiating with the Trans-Continental Lines for a considerable time the question of reducing the eastbound rate on crude rubber from Pacific Coast ports to eastern consuming points, which in conjunction with the ocean rates from the Far East to Pacific ports will equalize with the through rates via Atlantic ports.

Information has been received that as a result of these negotiations the special import rate on crude rubber from Pacific Coast ports to points as far east as Buffalo and Pittsburgh will be reduced from $1.33½ to 75c. per one hundred pounds, minimum carload weight 50,000 pounds.

Apply for reduced rate on Rubber footwear

Much of the rubber footwear in carloads from eastern manufacturing points to Pacific coast territory is moving through North Atlantic ports thence via coastwise lines through the Panama Canal.

This situation was brought to the attention of the Freight Rate Committee having jurisdiction over the adjustment of westbound rates, by a sub-committee of the Traffic Committee on February 7th, in Chicago. The suggestion was made that the through west bound rates be reduced, for instance, from $2.66½ to $2.30 per hundred pounds, from points in the Boston district, with corresponding reductions from other territory.

The proposal to reduce these rates will be considered by the western lines in order that this traffic may move to the west on rates equalized with those applying via the coastwise steamship lines.

New Bill of Lading Effective March 15

R. H. Goebel, manager of the Traffic Department of The Rubber Association issued the following bulletin on March 3 to firm members:

Traffic Bulletin No. 35 of February 8, informed you that new Uniform Domestic and Export Bills of Lading become effective March 15, 1922, as published in Supplement 15 to Consolidated Freight Classification No. 2, and that old forms of Domestic "Straight" Bills of Lading may be used prior to July 1, 1922 if stamped in legible type with the notation which was shown in that Bulletin.

The carriers' Uniform Bill of Lading Committee has, after further consideration, decided that old forms of "Order" Bills of Lading may also be used prior to July 1, 1922, but that the stamped notation shown in our Bulletin No. 35 must not be used.

In lieu thereof, the carriers will require the following notation to be stamped in legible type on old forms of Domestic "Straight" and "Order" Bills of Lading and signed as indicated, viz:

This bill of lading has been superseded by that shown in Supplement No. 15 to Consolidated Freight Classification No. 2, effective March 15, 1922, as filed with the Interstate Commerce Commission and State Railroad Commissions, and to the extent that it is inconsistent with the form and conditions published in such supplement or in subsequent issues of the Consolidated Freight Classification, it is superseded thereby.

....
(Shipper's Signature) (Agent's Signature)

Angle Valves for Disc Wheels

A special committee of the Tire Manufacturers Division of the Rubber Association of America headed by Chairman Joseph C. Weston of the Division met with a committee of motor car manufacturers at Detroit on March 9 for a conference on the use of angle valves on inner tubes in order to provide means of outside inflation where certain types of disc wheels are used. The technical aspects of the problem were gone over thoroughly and committees of all the automotive interests concerned will be appointed. The findings will be published as soon as decided on.

Brander & Curry, the well known dealers in tire fabrics, are now located in the Fisk Building, 250 West 57th St., New York. Telephone Circle 9096.

Report of Inventory—Production—Domestic Shipments of Pneumatic Casings—Inner Tubes—Solid Tires, Etc.

November, 1920, to and including December, 1921

"Production and "Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

"Shipments" includes only stock forwarded to a *purchaser* and does not include stock forwarded to a warehouse, branch, or on a consignment basis, or abroad.

(Compiled by The Rubber Association of America, Inc.)

MONTH	PNEUMATIC CASINGS				INNER TUBES				SOLID TIRES			
	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments
November, 1920	36	5,880,016	649,742	806,023	40	6,131,935	742,815	920,938	11	298,875	21,355	34,217
December, 1920	43	5,508,380	506,111	1,327,153	43	5,786,929	508,446	1,481,285	12	303,473	16,297	40,828
January, 1921	45	5,319,605	703,430	765,417	47	5,586,163	740,824	1,042,617	12	303,753	21,220	29,116
February, 1921	45	5,193,018	819,892	1,073,756	46	5,415,464	916,627	1,129,881	12	304,374	23,365	29,599
March, 1921	46	4,597,103	1,163,314	1,614,651	48	5,044,861	1,346,483	1,643,690	12	283,800	28,710	43,926
April, 1921	49	4,527,445	1,651,418	1,785,951	51	4,916,772	1,762,122	1,983,571	12	269,985	28,859	42,080
May, 1921	59	4,451,668	2,100,917	2,085,882	57	4,751,880	2,210,040	2,342,567	12	264,663	35,156	40,122
June, 1921	63	4,154,456	2,313,265	2,643,850	60	3,835,098	2,359,928	3,232,673	11	240,336	28,395	49,867
July, 1921	63	3,892,037	2,570,524	2,757,581	61	3,122,815	3,020,981	3,603,248	11	220,003	35,123	55,678
August, 1921	66	3,934,853	3,043,187	2,894,442	64	3,649,319	4,430,152	3,804,060	11	216,367	55,694	66,866
September, 1921	63	3,340,798	1,929,268	2,047,929	62	3,827,830	3,274,822	2,645,758	11	161,832	37,441	50,276
October, 1921	64	3,545,030	1,928,271	1,675,169	64	4,732,016	2,843,918	2,016,371	10	163,299	46,274	45,911
November, 1921	64	3,908,342	1,756,555	1,342,519	63	5,203,568	2,126,211	1,540,299	10	173,451	43,537	34,556
December, 1921	64	3,696,519	1,839,738	1,980,264	64	4,731,021	2,070,098	2,522,710	10	168,515	40,478	39,520

Kelly-Springfield Reports Loss for 1921

The report of the Kelly-Springfield Tire Co., New York, for 1921 shows a net loss of $56,959 against net profits in 1920 of $1,959,294.

In his remarks to stockholders, Alfred B. Jones, president, points out that the company closed the year without any current bank indebtedness. Inventory showed a substantial reduction, values of materials on hand and forward commitments at the close of the year having been based on market values.

In common with the entire rubber industry, Mr. Jones said, the company, in the early months of the year, suffered severe depression in sales. Production was reduced, but as the year advanced demand increased. The value of sales, in view of the drastic decline in tire prices, dropped below that of 1920, but there was an increase of 20 per cent in the number of tires sold. Extraordinary charges resulted from the further decline in the market values of materials and finished goods in the early part of the year, and the expenses incident to the operation of the new plant at Cumberland, Md., all of which extraordinary expense has been charged directly against the year's operations.

Commenting on the operations at the new Cumberland plant, the report says that production was begun in May and that at the close of the year the output had reached a substantial total. The board has been advised that production had reached a quantity sufficient to warrant the belief that no further provision for extraordinary operating charges would be necessary.

The detailed income account for 1921 and 1920 is as follows:

	1921	1920
Gross profits on sales ..	$6,004,521	$7,721,902
Oper. and admin. exp. ..	4,567,427	4,290,987
Operating income	$1,437,094	$3,430,915
Other income	445,915	604,531
Total income	$1,883,009	$4,035,446
Interest 8 per cent notes	477,777	1,492,774
Other int. and chgs.	1,912,191	....
Extra compensation	....	83,378
Provisions for invest.	....	500,000
Total deductions	$2,389,969	$2,076,152
Net loss for year	506,959	*1,959,294
Prof. and loss surp. after dividends	$6,166,777	$7,203,915

* Net income before Federal taxes.

The general balance sheet on Dec. 31 showed net current assets of $10.775.715 and net current liabilities of $863,595. The current assets consisted of $2,357,977 cash, $2,891,999 accounts and notes receivable, less reserves for doubtful accounts, and $5,525,739, the value of inventory figured at cost or market whichever is lower. The company, early last year, refunded its short-term obligations by issuance of $10,000,000 ten-year 8 per cent sinking fund gold notes.

Receiver Booth Reports Better Outlook for Republic Rubber

A statement showing the operations under the receivership of the Republic Rubber Corporation, Youngstown, Ohio has been issued by C. H. Booth, the receiver.

According to this statement, the first six months of operation under the receiver showed a gross profit from sales of $460,402.82. The operating expenses amounted to $450,544.24 leaving a profit of $9,860.58. Although idle expenses and other deductions show a net loss of $303,640.20 for the term of receivership up to December 31, 1921, this is less than the loss per month in the period preceeding the appointment of the receiver.

Much confidence over the ultimate establishment of the corporation on a sound basis was expressed by Mr. Booth in his report. He said that operating costs had been greatly cut, amounting in some cases to $100 a day on a single item with the same volume of production. It is declared that nothing but an increased volume of business, which is expected, is needed to make the corporation show operating profits.

Schweinert Back on The Job

The many friends of M. Charles Schweinert, the genial president of A. Schrader's Son, will be delighted to hear that he has completely recovered from a serious illness following an operation for appendicitis. For three months he has been under the care of his physician and is once more at the helm of the Schrader ship. M. Charles Schweinert is probably alone among high executives in the automobile industry with a record of thirty-five years with the house he now controls. He was selling valves for bicycle tires before the automobile business was born. The president of A. Schrader's Son is admired by all who meet him for his agreeable personality, a never failing optimism and almost boyish enthusiasm, joined with a spirit of fair play that extends to everyone in his employ.

M. Charles Schweinert

To Manufacture Rubber Tile and Floor Coverings

The Wright Rubber Products Co., of Racine Wis., has been recently organized and the following officers elected: President, Clarence H. Wright; vice president, F. A. Tecktonius; secretary and treasurer, L. J. D. Healey, all of Racine.

Directors: In addition to the above named officers John W Bate, president of the Ajax Auto Parts Co.; U. F. Durner, president of U. F. D. Durner & Co ,floor and wall contractors, Milwaukee; H. J. Johnson, senior partner of S. C. Johnson & Son; Stephen Bull, assistant secretary of the J. I. Case T. M. Co. and George Kamm of Kamm Brothers, general contractors.

The company will manufacture Wright rubber tile, "squares of silence," for flooring in offices, hospitals, theaters, and other public buildings.

The company is well financed, and U. F. Durner & Company will undertake to dispose of the whole output of the factory to begin with. This concern employs 125 men throughout the United States handling its contracts.

Clarence H. Wright, president and founder of the company with three other men built up the Racine Auto Tire Co. from a small concern to a nationally F. A. Tecktonius is vice president and known organization, starting in 1909. treasurer of the E. C. Tecktonius Manufacturing company. L. J. D. Healey was formerly with the U. S. Rubber company, the Federal Rubber company, and the Racine Auto Tire company, as chief chemist.

Four and one half acres of land have been acquired and erection of a modern factory building has been started.

Knox Tire Co. Properties Sold to Stockholders

Paul M. Ashbaugh, trustee for the Knox Tire & Rubber Co., Mt. Vernon, Ohio, on February 25 sold the buildings, equipment and other property of the company of F. G. Litch representing a committee of stockholders headed by F. D. Spencer and others. The properites had been appraised at $231,186.42 but the bidding which started at $75,000 rose until it eliminated all but two. The plant was finally sold to the interests represented by Mr. Litsih for $175,000.

It is maintained that the appraisment of the property did not include the machinery of the plant or a tract of twenty acres of land given the plant by the city of Mt. Vernon.

F. R. Henderson & Co. Now a New York Corporation

The old firm of F. R. Henderson & Co., Inc., dealers in crude rubber, 111 Broadway, New York, has been succeeded by a corporation under the name of F. R. Henderson & Co., Inc., of which Francis R. Henderson, is president, Harold H. Henderson, vice president, and Bancroft W. Henderson, vice president.

The Mincing Lane Rubber Market

Mincing Lane in London is a name to conjure with in the crude rubber world. For many years the leading factors in the trade have had their offices there. Formerly when the trade depended on South American grades, the rubber was auctioned off in the sales rooms after inspection of samples on the wharves. These sales were held periodically, and the brokers submitted catalogues of their offerings.

With the advent of Plantation rubber the auctions were discontinued and sales are now made by private treaty, but Mincing Lane remains the common meeting ground for all interested in the trade. American importers and dealers are frequent visitors there.

The accompanying interesting photograph is reproduced from the March issue of the *Rubber Age* of London, the photograph being furnished by courtesy of Messrs. Lewis & Peat, Ltd., It is a typical scene in which are shown a number of prominent members who transact their business in the Lane.

Among these can be seen, reading from left to right: Messrs. H. D. Cowan (Sanderson and Co.), Walton (Heilbut, Symons and Co.), Langley (Grisar and Co.), J. D. Johnston (Gardner and Co.), Bridgett (Smyington and Sinclair), Addinsell (Gow, Wilson and Stanton), Cole (Alden's Successors), B. Figgis (G. White and Co.), Loder (Chas. Hope and Sons), W. Jackson (Jones and Darke, Ltd.), S. S. Haw (Haw and Co.), W. E. Dodd (Hecht, Levis and Kahn), P. S. Martin (Gow, Wilson and Stanton), Sidney Willmott (Stern and Co.), Reeves (Cooper and Layman, Ltd.), James Rimmer and Walker (Arthur Meyer and Co.), Moulsdale (W. J. and H. Thompson), Granville (Zuzuki and Co.), Edgcumbe Sinclair (Symington and Sinclair), Harry Symington (Symington and Sinclair). A. Oliphant Devitt (Lewis and Peat, Ltd.) is standing on the steps of No. 6.

F. D. Williams Now with United & Globe Rubber Co.

John S. Broughton, president of the United & Globe Rubber Co., Trenton, N. J., has appointed Fred D. Williams as assistant to the president.

Mr. Williams has, for the past three years, been general manager of the L. H. Gilmer Co. of Philadelphia. Prior to that time he was for several years with both the Johns-Manville Co. and the United States Rubber Co.

The United & Globe Rubber Co. manufactures a most complete line of automotive products as well as a high grade line of mechanical rubber goods and have a reputation for quality and goods made to specifications.

The twenty-fifth annual meeting of the American Society for Testing Materials will be held June 26-July 1 at Atlantic City, N. J. with headquarters at the Chalfonte-Haddon Hall Hotel.

George C. Kloss Joins Delion

George C. Kloss who recently resigned from the Gillette Rubber Company where he was eastern district sales Manager to accept a position as special representative with the Delion Tire & Rubber Company of Baltimore, is one of the pioneers of the auto tire business.

Mr. Kloss's experience dates from 1900 when he started with the B. F. Goodrich Company. Five years later he joined the Continental Rubber Co., makers of the famous European racing tires of that name which later was taken over by the U. S. Rubber Company. Later he joined the Republic Rubber Company with whom he was associated for twelve years as assistant branch manager and special representative. After leaving republic he served as eastern district manager with the Batavia and Gillette Rubber Companies.

Continental Rubber Products Corp. is Organized

Papers of incorporation for the Continental Rubber Products Corporation, which will locate at Denver, Col., were recently approved by the secretary of state.

Negotiations are now under way for the purchase of a factory site and equipment, according to A. E. Sidnell, president and treasurer of the new company.

MINCING LANE, LONDON, THE FAMOUS CRUDE RUBBER MARKET
The photograph shows a number of leading traders.

India Reports Prosperous Year

While it has been generally conceded in tire circles that The India Tire & Rubber Co., Akron, Ohio, made unusual progress during the past year, notwithstanding the business depression, the exact extent of that progress was not made public until after the annual meeting of the stockholders and directors of the company on Jan. 17.

Without refinancing in any way, and without issuing any new stock, this concern materially reduced its bank loans, wrote off losses on raw materials and finished merchandise on hand exceeding $400,000, and greatly improved its financial position.

D. A. Grubb, secretary and general sales manager of the company, states that all this was made possible by the remarkable increase in new business. In this connection, Mr. Grubb further said:

"Our turnover during 1921 exceeded our fondest expectations. We now have 340 per cent more new accounts than the year before. Compared with the last half of 1920, our sales from July to January in the year just closed show an increase of 130 per cent, while the value of our December business was the largest in the history of this company—181 per cent larger than the same month the previous year."

Although these figures unmistakably show a very unusual improvement, on account of the parity between the low prices of today and the high prices of 1921, they do not fully indicate the extent to which the India company has progressed.

When asked to what factor he most attributed this enviable and substantial growth, Mr. Grubb replied: "Unquestionably much of our success is directly attributable to the fact that India Tires told their own story of quality at a time when quality counted much.

"But," added Mr. Grubb, "Another thing played an important role—our selling policy. The fact that we did not embarrass and handicap our dealers by unloading merchandise at cut prices to so-called "gyps" not only moved us up another notch in the opinion of our then established accounts, but incidentally made us many new friends."

The India Tire & Rubber Co. has established another branch warehouse at 250 West 54th Street, New York City, where an adequate quantity of all India products will be constantly maintained.

This is the sixth depot which the India company has established in less than a year, other warehouses being located in Dallas, San Francisco, Milwaukee, Minneapolis and Cleveland.

Seamless Rubber Co. Reports Profit of $300,000

In the report of the United Drug Company for 1921 it is stated that its subsidiary, the Seamless Rubber Company, New Haven, Conn., turned the corner of depression in October and during each succeeding month so increased its profits that it is now running at the rate of over $300,000 net profit per year.

Rubber Exports for January 1922

The Rubber Division of the United States Bureau of Foreign and Domestic Commerce is pleased to transmit the following statement in advance of general publication. The figures are subject to correction. A detailed statement will be published later.

Product		January 1922
Scrap Rubber	(Dollars)	48,012
Reclaimed rubber	"	15,472
Boots, rubber	(Pairs)	6,055
Boots, rubber	(Dollars)	17,734
Shoes, rubber	(Pairs)	54,387
Shoes, rubber	(Dollars)	46,773
Canvas shoes, rubber soled	(Pairs)	109,252
Canvas shoes, rubber soled	(Dollars)	90,428
Soles and Heels	"	36,831
Battery jars	"	1,413
Other electrical supplies	"	3,793
Other hard rubber goods	"	24,225
Rubber thread	"	102,018
Belting	"	79,610
Hose	"	73,210
Packing	"	29,326
Automobile casings	(No.)	80,511
Automobile casings	(Dollars)	1,148,616
Other casings	(No.)	1,577
Other casings	(Dollars)	4,875
Automobile tubes	(No.)	48,935
Automobile tubes	(Dollars)	116,385
Other tubes	(No.)	1,134
Other tubes	(Dollars)	1,158
Auto. solid tires	(No.)	3,890
Auto. solid tires	(Dollars)	147,601
Other solid tires	(No.)	22,610
Other solid tires	(Dollars)	8,231
Tire repair material	"	10,293
Drug sundries	"	41,391
All other mfrs.	"	183,862
Total manufactures	"	2,231,257

Exports of Principal Rubber Products During January 1922

Countries	Rubber Belting *Dollars*	Rubber Hose *Dollars*	Rubber Shoes *Pairs*	Canvas Shoes *Pairs*	Auto Casings *Dollars*	Auto Tubes *Dollars*	Auto Solids *Dollars*	Drug Sundries *Dollars*
Belgium	135	....	....	....	1,505	....	....	300
Denmark	....	1,073	2,594	....	24,818	4,537	3,060	357
England	2,168	16,341	3,818	28,607	321,848	5,112	11,032	11,512
Finland	....	....	....	....	....	....	....	....
France	3,638	2,207	181	106	10,669	2,537	355	1,672
Germany	....	....	....	....	....	....	143	....
Italy	....	2,023	....	....	110	66	....	479
Netherlands	30	1,123	....	504	2,802	75	....	620
Norway	48	268	1,766	....	5,055	142	1,102	....
Spain	....	....	1,001	....	18,796	1,912	2,297	932
Sweden	1,675	....	....	....	27,914	2,578	....	173
Switzerland	....	....	....	....	....	....	....	....
Canada	4,020	5,451	289	5,883	98,572	20,253	14,759	13,727
Cuba	1,795	3,851	2,568	580	74,342	7,045	16,374	2,790
Dominican Rep.	110	246	384	376	8,714	2,046	316	275
Mexico	13,958	16,850	5,038	15,977	42,730	12,346	643	2,298
Panama	58	1,956	72	1,236	10,984	1,332	383	181
Argentina	410	1,841	7,700	....	70,357	10,786	711	676
Brazil	1,932	6,476	....	....	22,076	1,246	402	262
Chile	1,853	....	1,748	....	9,823	100	284	....
Peru	....	135	....	....	13,298	616	190	21
Uruguay	....	....	....	792	13,101	1,213	....	....
British India	1,640	1,622	....	420	7,469	192	8,285	101
China	6,329	723	2,203	1,368	1,255	25	....	1,095
Dutch E. Indies	322	....	....	....	11,113	2,546	1,084	....
Japan	2,267	1,454	11,208	1,320	15,255	145	3,431	....
Australia	6,697	783	336	....	29,406	4,907	1,339	266
New Zealand	63	....	....	....	46,757	306	13,839	350
Philippines	784	1,596	3,000	21,977	36,836	16,273	2,997	951
Brit. S. Africa	13,114	898	198	424	79,638	359	....	4

February Importations of Crude Rubber

(Figures compiled and distributed by The Rubber Association of America, Inc., 52 Vanderbilt Ave., New York City)

[Estimated net weights—long tons]

PLANTATIONS

From	Tons
Batavia	648
Belawan-Deli	3,017
Cochin	208
Colombo	1,509
Japan and others	20
Liverpool	1,829
London	2,248
Malacca	1,272
Penang	1,241
Pt. Swettenham	142
Rotterdam	154
Singapore	14,302
Sourabaya	638
Teluk Anson	42
	22,270

MANICOBA & MATTO GROSSO

	Tons
Matto Grosso	41

AFRICANS

From	Tons
Antwerp	104
Havre	3
Liverpool	6
Marseilles	188
	301

CENTRALS AND GUAYULE

	Tons
Centrals (Mexico and Central America)	14
Guayule (Mexico)	..
	14

PARAS

	Tons
Manoas	610
Para	737
	1,347

GUMS, WASTE RUBBER, ETC., IMPORTED FROM VARIOUS SOURCES

	Tons
Waste	6
Balata	28
Miscellaneous Gums	448

COMPARISON 1921-1922

	Feb.-1921	Feb.-1922	Total Importations 2 months ending, Feb. 28 1921	1922
Plantations	7,913	27,270	20,732	48,044
Paras	432	1,347	1,744	2,263
Africans	269	301	312	462
Central	2	14	5	30
Guayule	223	..	223	..
Manicoba and) Matto Grosso)	..	41	..	41
	8,839	28,973	23,016	50,840

ARRIVALS PLANTATIONS FOR FEBRUARY, 1922, SHOWING PORTS OF ORIGIN AND ARRIVAL

From	Arrived at	Tons
Batavia	New York	648
Belawan-Deli	New York	3,017
Cochin	New York	208
Colombo	New York	1,509
Japan and Others	New York	20
Liverpool	New York	1,829
London	New York	2,248
Malacca	New York	1,272
Penang	New York	1,241
Port Swettenham	New York	142
Rotterdam	New York	154
Singapore	New York	14,219
Singapore	Boston	83
Sourabaya	New York	638
Teluk Anson	New York	42
		27,270

ARRIVALS OF PLANTATIONS BY PORTS

Atlantic Ports		
New York	27,187	
Boston	83	
		27,270

MARKETS

Cottons and Fabrics

NEW YORK, MARCH 11, 1922

The cotton markets during the fortnight maintained practically an unchanged price level;, fluctuations being irregular and within a narrow range. Dealings in extra staple cotton has been confined almost entirely to the lower grades. The uncertain conditions as reflected by the labor troubles at the New England mills have made manufacturers limit themselves to actual needs to fill out present stocks and complete orders on their books. Egyptians held their own and more inquiry was shown in Pima with little being offered for sale.

EGYPTIAN COTTON

This week another large consignment of Egyptian cotton reached Boston—14,000 bales arriving on the steamship Blair—the second large shipment since the arrangement for an equal division of shipments was made with the British steamship lines by the United States Shipping Board. There has been more call for Egyptian cotton during the past two weeks and the tendency has been strong some numbers showing a slight advance in price. The general price for medium grade uppers vary considerably; the range being from 26½ to 28½ cents, with some reported as low as 25½ cents. Medium grade Sak as used extensively in tire yarn work is offered at 35 to 36 cents; the slightly better grades ranging from 39 cents to 42 cents with 44 to 47½ cents asked for the highest grade, tariff paid.

PIMA COTTON

There is continued interest in Pima cotton and some sales were reported at 36 cents for full five-eighths staple. There were inquiries for inch and a half, in No. 2 grade, around 34 cents. For No. 1 inch and five-eighths staple, 37½ to 38 cents was offered but there was none available under 39 to 40 cents.

Duty of Seven Cents a Pound Proposed for Long Staple Cotton

A majority of the members of the Senate Finance Committee at Washington has agreed upon a duty of seven cents a pound on long staple cotton; short staple cotton to remain on the free list. The duty will apply to cotton of a staple of one and three-eighths inches or more. The committee's action was somewhat of a surprise as the Arizona cotton growers had been talking of a tariff as high as 20 cents a pound. The rate reported is not satisfactory to certain members of the committee nor to members of the agricultural bloc of the Senate and it is said that efforts will be made to make the duty ten cents or maybe fifteen cents per pound. It is now seven cents in the Emergency tariff but in the Fordney bill as passed by the House staple cotton is on the free list. The tire manufacturers are vitally interested in the proposed duty and have taken the position that a tariff even of 7 cents a pound is entirely unwarranted; it being their contention that Pima cotton which it is intended to foster is not as desirable for tire purposes as Egyptian cotton.

The largest unit of cost in the manufacture of tires is cotton fabric and ninety per cent of the fabric used is made from staple cotton. Furthermore, the tire industry uses more than one half of all staple cotton consumed in this country.

Fighting the "Duck Branding" Bill

Strong efforts are being made by the Association of Cotton Textile Merchants, the National Duck Associations and the tire manufacturers to keep in the assembly committee on laws the Slacer bill introduced in the New York State legislature providing for a change in the present standards of duck—a change which would entail unnecessary expense and trouble to tire manufacturers.

There has developed such strong opposition to the bill, and its provisions are so drastic, that it is hoped that the measure may never be reported from the committee. It has been said that the interests back of the Slacer bill are endeavoring to push identical legislation in other states. The bill was introduced in the New York State legislature on Jan. 31. Resolutions passed by the Association of Cotton Textile Merchants of New York, in opposition to the measure were published in the RUBBER AGE of March 10.

TIRE FABRICS

Sales of tire fabrics during the past two weeks have been confined almost exclusively to small lots. Practically no recovery from the dullness which set in nearly two months ago has been noted. There was heavy buying in the early part of January by the larger users of fabrics and such sales as are now made are for the account of the smaller and new manufacturers. Yet reports from the principal tire centers indicate that operations as a whole continue high and for this reason mill representatives feel that it will not be long before business will get into a steady stride.

SQUARE WOVEN				
17¼-ounce Egyptian uppers, combed,	lb.	.70	@	.75
17¼-ounce Egyptian uppers, carded,	lb.	.68	@	.70
17¼-ounce Sakellarides, combed,	lb.	.85	@	—
17¼-ounce Sakellarides, carded,	lb.	.73	@	.75
17¼-ounce Peeler, combed,	lb.	.65	@	—
17¼-ounce Peeler, carded	lb.	.45	@	.50
CORD FABRICS				
Combed Sakellarides	lb.	.85	@	.90
Carded Sakellarides	lb.	.78	@	.80
Combed Peeler	lb.	.70	@	.75
Carded Peeler	lb.	.51	@	.55
Combed Egyptian uppers	lb.	.75	@	—
Carded Egyptian uppers	lb.	.72	@	.75

SHEETINGS—DUCKS—BURLAPS

Sheetings—The market has been inactive with prices practically unchanged. The demand from the rubber trade which had been considerable has quieted down. There was some little interest in 40 inch 3.60 yard at 10 cents and 2.85 yards at 10⅞ cents to 11 cents. For some 40 inch 4.25 yard, 8 cents net was paid. Producers insist that in view of the price of cotton these prices are entirely too low.

Ducks—There was little of interest in this market save perhaps a ripple caused by certain hose and belting duck which report says has been available at 26 cents a pound. Single filling was easy at 13½ at 16½ cents a pound, card basis, prices varying according to grade. Double filling was quoted lower at 16 cents and shoes ducks continued at 40 cents a pound.

Burlaps—There has been more active bidding for low priced lots due to the strong tone of the Calcutta market. The tendency of the market is upward.

SHEETINGS				
40-inch 2.50-yard	yd.	.12½	@	—
40-inch 2.85-yard	yd.	.10⅞	@	—
40-inch 3.15-yard	yd.	.12	@	—
40-inch 3.60-yard	yd.	10	@	.10¼
40-inch 3.75-yard	yd.	.09	@	—
40-inch 4.25-yard	yd.	.08	@	—
DUCKS				
Belting	lb.	.31	@	—
Hose	lb.	.31	@	—
Enameling	lb.	.30	@	.34
Shoe Ducks	lb.	.40	@	—
Single filling	lb.	.13½	@	.16¼
Double filling	yd.	.16	@	.17½
BURLAPS (Carload Lots)				
7 -ounce 40-inch	yd.	3.90	@	3.85
7½-ounce 40-inch		4.00	@	4.05
7½-ounce 45-inch		4.65	@	4.80
10 -ounce 40-inch		4.05	@	4.10
10 -ounce 45-inch		4.85	@	5.00
8 -ounce 45-inch		4.75	@	4.70
10 -ounce 45-inch		6.00	@	6.25
10½-ounce 40-inch		5.30	@	5.35
DRILLS				
37-inch 3.25-yard	yd.	.09¾	@	—
37-inch 2.75-yard	yd.	.10½	@	—
37-inch 3.00-yard	yd.	.10	@	—
37-inch 3.50-yard	yd.	.09¼	@	—
37-inch 3.95-yard	yd.	.08½	@	—
OSNABURGS				
30-inch 7-ounce		.08	@	.09
40-inch 7-ounce		.10½	@	.10¾

Chemicals and Compounding Ingredients

THE GENERAL MARKET—NEW YORK, MARCH 11, 1922—The demand for industrial chemicals was extremely dull during the last period. In its general features the market had much the same characteristics as marked it for some time past. Buyers showed little inclination to be influenced in their purchases by the general betterment in business; still holding to close conservatism and buying for their present needs only. However, there was noted a somewhat broader inquiry with an advancing tendency in spot prices. Producers find much to encourage them in the strong tone of the market; prices holding remarkably firm and in many instances advancing when a fair demand appears.

ACCELERATORS

Organic

Aldehyde ammonia, crystals	lb.	$ .90 @	.95
Aniline oil, bulk basis,	lb.	.16½ @	.18
Excellerex,	lb.	.55 @	—
Formaldehyde-aniline	lb.	.45 @	.50
Hexamethylene-tetramine (powdered)	lb.	.72½ @	.75½
Paraphenylene-diamine	lb.	1.55 @	1.65
Thiocarbanilid	lb.	.35 @	.60
Vulcocene	lb.	.35 @	—

Inorganic

Lead, dry red bbls.	lb.	.08 @	.08¼
Lead, sublimed white	lb.	.06½ @	—
white, basic carbonate	lb.	.06½ @	.07¼
Litharge, domestic	lb.	.08½ @	—
imported	lb.	.17 @	—
Lime, Superfine	lb.	.02 @	.02½
Magnesium, calcined. extra light	lb.	.45 @	—
heavy	lb.	.05½ @	—
Magnesite, powdered	ton	50.00 @	65.00

COLORS

Blacks

Carbon Black	lb.	.10½ @	.20
Micronex	lb.	.12 @	.17
Lamp black	lb.	.17 @	.45
Bone "	lb.	.05½ @	.07½
Drop "	lb.	.07½ @	.16
Ivory "	lb.	.15 @	.45

Blues

Prussian	lb.	.50 @	.55
Ultramarine	lb.	.10 @	.35
Cobalt	lb.	.23 @	.30

Browns

Iron oxide	lb.	.04 @	.05
Sienna, Italian, raw and powdered	lb.	.05½ @	.14
Umber, Turkey, raw and powdered	lb.	.04¼ @	—

Greens

Chrome, light, c. p.	lb.	.30 @	.32
medium	lb.	.35 @	.36
dark	lb.	.36 @	.45
commercial	lb.	.12 @	—

Reds

Antimony, crimson	lb.	.35 @	.36
golden	lb.	.21 @	.27
red	lb.	.20 @	.22
Indian, English, pure	lb.	.12 @	.15
Para toner	100 lb.	1.40 @	—
Rubber makers red	lb.	3.50 @	—
purple	lb.	2.50 @	—
Toluidine tone	lb.	2.50 @	—
Tuscan	lb.	.17½ @	.44
Venetian	lb.	.03½ @	.06½
Vermillion, quicksilver, English	lb.	.85 @	.90
domestic	lb.	.25 @	.30

Whites

Albalith	lb.	.06 @	.06½
Aluminum bronze	lb.	.55 @	.60
Azolith	lb.	.06 @	.06½
Lithopone, domestic (factory)	lb.	.06¼ @	—
Zinc oxide. American Horse Head Special	lb.	.08 @	.08½
XX red	lb.	.07½ @	.08
American Azo: ZZZ (lead free)	lb.	.07½ @	.08
ZZ (under 5 per cent leaded)	lb.	.07¼ @	.07¾
Z (8-10 per cent leaded)		.07 @	.07½
Zinc oxide, French process, White seal	lb.	.11 @	.11¼
Green seal	lb.	.09¾ @	.10¼
Red seal	lb.	.08¾ @	.09¼

Yellows

Cadmium sulphide	lb.	1.25 @	1.50
Chrome, light, c. p.	lb.	.17 @	—
dark	lb.	.17 @	—
medium	lb.	.17 @	—
Ocher, French	lb.	.02¼ @	.03
domestic	lb.	.02 @	.02½
Zinc chromate	lb.	.33½ @	—

COMPOUNDING INGREDIENTS

Aluminium flake	ton	25.00 @	29.50
hydrate	ton	20.00 @	22.00
Ammonium carbonate, lump	lb.	.10¼ @	.11¼
Barium dust	ton	100.00 @	—
Barytes, southern off-color,	ton	15.00 @	17.00
Western, prime white,	ton	23.00 @	—
Basofor	lb.	.04½ @	—
Beta-naphtol,	lb.	.29 @	—
Blanc fixe, dry, f.o.b. works	lb.	.04¼ @	.04¼
Chalk, precipitated, extra light	lb.	.03½ @	.04¼
heavy	lb.	.02½ @	.03¼
Clay, China, domestic,	ton	7.50 @	9.00
imported	ton	16.00 @	21.00
Dixie	ton	22.00 @	32.00
Blue Ridge	ton	20.00 @	32.00
Fuller's Earth, powdered	ton	22.00 @	25.00
Fossil flour	ton	60.00 @	..
Glues, extra white	lb.	.30 @	.40
medium white	lb.	.22 @	.26
cabinet	lb.	.18 @	.30
cabinet low grade	lb.	.15 @	.18
common bone	lb.	.08½ @	.14
Graphite flake, bbls.	lb.	.14 @	.20
powdered	lb.	.04 @	.10
Infusorial earth, powdered	ton	60.00 @	—
bolted	ton	65.00 @	—
Mica, powdered	lb.	.15 @	—
Rotten Stone (powdered)	lb.	.02½ @	.04½
Silica (aluminum)	ton	12.00 @	35.00
Soapstone, powdered	ton	.15 @	.20
Starch, powdered corn	cwt.	2.32 @	2.42
Talc, domestic	ton	18.00 @	20.00
French	ton	22.50 @	30.00
French, high grade	ton	40.00 @	45.00
Italian	ton	.44 @	.55
Terra Alba, American No. 1	cwt.	1.85 @	2.00
American No. 2	cwt.	1.25 @	..
Tripoli	lb.	.02½ @	—
Whiting, commercial	cwt.	1.15 @	—
Quaker	ton	13.00 @	15.00
English cliffstone	cwt.	1.75 @	2.00
glider's bolted	cwt.	1.20 @	1.35
Paris white American	cwt.	1.25 @	1.35
Zinc Oxide— 5 per cent leaded		.07¼ @	.07¾
10 per cent lead sulphate	lb.	.07 @	.07½
20 per cent lead sulphate	lb.	.07 @	.07½
35 per cent lead sulphate	lb.	.07 @	.07½

(Also see whites)

MINERAL RUBBER

Gilsonite	ton	70.00 @	—
Genasco (factory)	ton	50.00 @	—
Hard hydrocarbon	ton	33.00 @	45.00
Soft hydrocarbon	ton	30.00 @	35.00
Pioneer M.R.	ton	36.00 @	54.00
320 M. P. hydrocarbon (c. l. factory)	ton	47.50 @	50.00
300/310 M. P. hydrocarbon (c. l. factory)	ton	42.50 @	45.00
Synpro, granulated, M.R. (factory)	ton	59.50 @	64.50

SOFTENERS

Acids

Acetic, 28 per cent	cwt.	2.50 @	3.00
Carbolic (phenol)	lb.	.11½ @	.16
Creaylic, 97 p.c.	lb.	.50 @	.52
95 p.c.	lb.	.45 @	.47
Muriatic, 20 degrees	cwt.	1.25 @	1.50
Nitric, 36 dgrees	cwt.	5.00 @	6.00
Sulphuric, 66 degrees	ton	16.00 @	17.00
60 degrees, bulk	ton	10.00 @	11.00
Tartaric, crystals	lb.	.30 @	—

Alkalies

Caustic soda, 60 p.c.	cwt.	2.50 @	2.57½
Soda ash, 48 p.c.	cwt.	1.27½ @	1.47½

Oils

Castor, No. 3, bbls.	lb.	.10½ @	—
Corn, crude, bbls.	lb.	.09½ @	—
refined	lb.	.11¼ @	—
Chinawood, bbls.	lb.	.14 @	—
Cottonseed,	lb.	.10 @	—
Glycerine, c.p. drums	lb.	.16½ @	.17
Linseed, domestic	lb.	.86 @	—
imported	lb.	.72 @	.73
Palm, Niger	lb.	.06½ @	.07
Lagos	lb.	.08 @	.08¼
Peanut, domestic, crude	lb.	.09½ @	.10
Pine, steam distilled over 930° sp. gr.	gal.	1.00 @	—
Rapeseed, refined	gal.	.86 @	.88
blown	gal.	.92 @	.95
Rosin, first rectified	gal.	.37 @	—
second rectified	gal.	.39 @	—
Tar, commercial	gal.	.31½ @	—
Soya Bean, crude, bbls.	lb.	.09¼ @	.09½
" " refined	lb.	.10¾ @	.11

Resins and Pitches

Cumar resin, hard	lb.	.09 @	.12
Cumar resin, soft	lb.	.09 @	.12
Tar, retort	bbl.	9.00 @	—
kiln burned	bbl.	10.00 @	—
Pitch, Burgundy	lb.	.05 @	.06
coal tar	ton	01½ @	—
pine tar		03½ @	—
Rosin, grade K	bbl.	5.70 @	—
Strained	bbl.	6.00 @	—
Shellac, fine orange	lb.	.80 @	—

Solvents

Acetone, drums, c.p.	lb.	.12½ @	.13
Alcohol, denatured, No. 1	gal.	.38 @	.39
Methyl, 95 per cent, drums	gal.	.54 @	.56
Ethyl, 190 proof, bbls.	gal.	4.70 @	4.80
Benzol, 90 per cent	gal.	.27 @	.32
pure	gal.	.32 @	.34
Carbon bisulphide,	lb.	.06 @	.07
tetrachloride	lb.	.09½ @	.11½
Dimethylaniline	lb.	.38 @	.45
Motor gasoline, steel bbls.	gal.	.27 @	—
Toluol, pure	gal.	.30 @	.35
Turpentine, spirts	gal.	.88 @	—
wood	gal.	.78 @	.80
Xylol, pure	gal.	.45 @	.51
commercial	gal.	.31 @	.38

Waxes

Beeswax white, pure	lb.	.35 @	.39
Caranuba, No. 1	lb.	.44 @	.46
Ceresin, white	lb.	.09 @	.10
Bayberry	lb.	.20 @	.22
Montan, crude	lb.	.05 @	.05½
Ozokerite, hard, pure,	lb.	.26 @	.27
Paraffin	lb.	.08 @	.15
Petrolatum, amber, bbls.	lb.	.04½ @	—
dark amber,	lb.	.04 @	—

SUBSTITUTES

Black	lb.	.07 @	.14
White	lb.	.08 @	.16
Brown	lb.	.10 @	.14
Brown factice	lb.	.08 @	.15
White factice	lb.	.09 @	.16

VULCANIZING INGREDIENTS

Lead, black hyposulphite (black hypo)	lb.	.35 @	.42
Orange mineral, domestic	lb.	.11 @	.13
Sulphur chloride (jugs)	lb.	.05 @	.06
Sulphur flour	cwt.	2.35 @	3.15
Bergenport (c.l.)	cwt.	2.55 @	—
superfine, 99½ p.c.	cwt.	2.40 @	2.90

Litharge—Slight improvement was noticed in the demand for litharge. Quotations follow: 100 pound kegs, less than 500 pounds, 12¼ cents; 500 to 2000 pounds, 11.02 cents; 2000 to 10,000 pounds, 10.58 cents.

Orange Mineral—A fairly good business was done with Domestic at 11 at 13 cents per pound; French at 15 cents and German 14 cents.

Whiting—This material was in excellent demand and prices were well maintained. Domestic manufacturers asked $14.00 to $15.00 per ton f.o.b. works. English cliffstone remains unchanged at $24.00 to $25.00 per ton.

Talc—There was a steady demand for the domestic product and dealers in foreign talc report satisfactory business. Domestic producers quote $18.00 to $20.00 per ton f.o.b. works and high grade French product is priced at $40.00 to $45.00 per ton. Italian talc is quoted at $44.00 at $50.00.

Lithopone—There is little accumulation of stocks and the demand seems sufficient to take up all the product that can be supplied. Quotations on domestic material remain unchanged at 6 cents per pound in bags; 6¼ cents in barrels, carlots; 6½ cents, less than carlots.

Blanc Fixe—There have been no large quantities of this material dealt in but the demand has been somewhat better. Dry brought 4 at 4¼ cents per pound and pulp $40.00 at $50.00 per ton.

Carbon Tetrachloride—There was very little activity in this market and prices were somewhat easier for foreign material. Domestic producers continued to ask from 9½ to 12 cents per pound according to quantity.

Carbon Bisulphide—Supplies are not heavy and more interest is shown in this product. The tone of the market is good and prices remain unchanged at 6 at 7 cents per pound.

Benzol—Prices are well maintained and the demand continues active for both domestic and foreign account. There is very little pure product to be had and the 90 per cent brought as high as 40 cents a gallon.

Toluol—The market shows a firm tone and the demand has been steadily maintained. Quotations were 30 at 35 cents per gallon for pure.

Caustic Soda—There was a good demand and prices showed an upward tendency. Dealers quoted $3.50 for 100 pounds, standard brands, ex store.

Soda Ash—Very little trading was reported. Manufacturers have announced their contract prices, per 100 pounds, 48 per cent basis, for carlots at works: Bulk, $1.10; bags, $1.20; barrels, $1.40. Spot about 10 per cent above these figures. For 100 pounds, 58 per cent basis, from $1.65 to $1.80 was asked according to quantity.

Zinc Oxide—Considerable interest was shown in this market by tire manufacturers and prices throughout were firm. Domestic producers asked 8¾ cents for red seal; 11 cents for white seal; 9¾ cents for green seal; American Azo, ZZZ, 7½ @ 8 cents; ZZ 7¼ @ 7¾ cents; American Horse Head, special, 8 @ 8½ cents; XX red, 7½ @ 8 cents.

Barytes—There was only a fair demand and Western prime continues at $23.00 per ton f.o.b. works. Foreign material continues to come in but does not materially affect business in the domestic product.

Rapeseed Oil—There was a good demand in a fairly firm market. Sales of refined were reported at 86 cents per gallon. Reports indicate that the outlook for the crop in India is very good.

Soya Bean—The market was easier with a falling off in inquiry. Sales were noted of spot at 10¾ cents per pound in barrels. Crude brought 10¾ at 11 cents; refined, barrels, 11½ at 12 cents.

Aniline Oil—There is good inquiry for this product but prospective buyers continued to feel for lower prices. Sellers continue to quote 16½ to 17½ cents.

Crude Rubber

March 11, 1922

The crude rubber market at this date remains in a stagnant condition, prices having fallen off about ½c a pound on rib smoked sheets during the past week. Buying interest on the part of manufacturers is reported almost nil. Rib smoked sheets on the spot are quoted at 14¾ at this writing and First Latex at 14½.

Para grades on the other hand have moved up slightly on an average of ½c a pound on the best grades. This movement, small as it is, reflects the growing scarcity of South American qualities as very little is coming into the country.

The amount of rubber which arrived during February was reported by the Rubber Association as about 29,000 tons which is considerably above any recent month's importation. Stocks in London remain at about 67,000 tons.

On the day of writing the market at Singapore displays greater strength than the New York market due, it is reported, to speculation there. Such evidences are sporadic, however, and will not influence the general course of the market, as the rubber trade is languishing in all countries and the producers are looking to increased stimulation in the United States for better prices.

Quotations on the various grades on this date are as follows:

Plantations			
Ribbed Smoked Sheets spot	.14⅛	@	.14¾
April	.14⅜	@	.15
April /May	.15⅛	@	.15⅛
April /June	.15⅛	@	.15⅜
July /Sept.	.16⅛	@	.16⅜
July /December	.17	@	.17⅛
October /December	.17⅛	@	.17⅜
Smoked sheets plain, spot	.13¼	@	.13½
First Latex Pale Crepe, spot	.14¼	@	.14½
April	.14½	@	.14¾
April /May	.15	@	.15⅛
April /June	.15⅛	@	.15⅛
July /Sept.	.16⅛	@	.16½
July /Dec.	.16¾	@	.17
October /December	.17⅛	@	.17½
Amber Crepe No. 1	.14¼	@	.14½
" " " 2	.13½	@	.13¾
" " " 3	.13	@	.13¼
Grand Central Crepe	.13⅛	@	.13½
Light clean thin brown, Crepe	.13⅛	@	.13½
Clean Thin Brown	.12¾	@	.13
Commercially Clean thin	—	@	—
Specky Brown Crepe	.12	@	.12⅛
Roll Brown Crepe spot	.12⅛	@	.12½
April /June	.13	@	.13¼
Paras			
Madeira Fine	.19	@	.19¼
Acre Fine	.18	@	.18¼
Up-river Fine	.17½	@	.17¾
Up-river Medium	.16¾	@	.17
Up-river Caucho ball	.12½	@	.12¾
Up-river Coarse	.12½	@	.13
Islands Fine	.16¼	@	.16½
Islands, Medium	.15½	@	nom.
Islands Coarse	.08	@	.08¼
Cameta	.09½	@	.10
Xingu Ball	.10½	@	.11
Tapajos fine, spot	.17¼	@	.17½
Pontianac			
Prime Pressed	.13	@	.13¼
Plantation	—	@	.07½
Bangermassin	.08	@	.08¼
Palembang	.10	@	.10¼
Siak Gutta Percha	.18¾	@	.18½
Prime Macassar	2.75	@	2.85
Balata			
Panama Block	.30	@	.40
Surinam Sheets	.65	@	.67
Columbia Block	.42	@	.43
Venezuela Block	.51	@	.53

Reclaimed Rubber

New York, March 11, 1922

The continued weakness of the crude rubber market is still reflected in reclaims.

Quotations, which remain practically unchanged since our last report, are nominally as follows:

Standard Reclaims			
Floating	$.12	@	$.13
Friction	.12	@	.13
Boots and Shoes	.10	@	.10½
Boots and Shoes (washed)	.13	@	.14
Mechanical	.08	@	.10
Hose	.10½	@	.11½
Tires, truck	.08	@	.09
Tires, auto	.09	@	.10
White	.13	@	.14

Scrap Rubber

New York, March 11, 1922

There has been little change in the market for scrap rubber since our last report. Boots and shoes continued to decline slightly, and reclaimers are offering 0.02¾ cents a pound delivered for this grade. However, no sales of any volume have been reported. Auto tires also dropped slightly in price due to the following conditions: Many of the mills in the east have stocked up for spring requirements at low prices. Western dealers in scrap are enjoying any business being placed by reclaimers in their part of the country because eastern dealers find it impossible to meet competition under present freight charges, which on this grade from New York to Akron are $9.00 a ton in carload lots.

Quotations of this date are nominally as follows:

Auto tire peelings	.01¼	@	.01¼
Standard White auto	.01¼	@	.01¼
Mixed auto	.00½	@	.006/10
Bicycle tires	.00¼	@	.00⅝
Solid truck tires	.00¾	@	.01
Boots and shoes	.02¼	@	.02½
Arctics, trimmed	.02	@	.02¼
Arctics, untrimmed	.02	@	.02½
Inner tubes, No. 1	.03¼	@	.03½
Inner tubes, compounded	.02½	@	.02⅝
Battery jars, black compounded	Nominal		
Battery jars No. 1 bright fracture	Nominal		
Inner tubes, red	.02½	@	.02⅝
Heels and pads	Nominal		
Black mixed	.00¼	@	.00¾
Garden hose	.00½	@	.00⅝
Air brake hose	.00½	@	.00¾
Red packing	.01	@	.01¼
Red mixed rubber	.01¾	@	.02
White mixed rubber	.01¾	@	.02

American Rubber Patents

1,406,151—Manuel Charles, Mexica, Mexico Tire.

1,406,016—John Hodley, Shingleton, Mich. Cushion Tire.

1,405,972—Charles J. Dalton, New York, New York. Oversized Plural Truck Tire.

1,405,973—Charles J. Dalton, New York, New York. Oversized Truck Tire.

1,405,859—Michael J. O'Connor, Bloomingdale, N. J. Resilient Tire.

1,405,960—Leander W. Wood, Fontanelle, Iowa. Resilient Tire.

1,405,470—George H. Wheatley, Milwaukee, Wis. Method of and Apparatus For Making Resilient Tire.

1,405,427—Chase F. Ofensend, Akron, Ohio, assignor to the Miller Rubber Company, Akron, Ohio. Apparatus For Building Cord Tires.

1,404,320—Harry W. Roberts and John H. Overton, Trenton, N. J. Apparatus for Forming Hollow Rubber Goods.

1,404,459—O. A. Lane, Los Angeles, Calif., assignor to National Airless Tire Co., Reno, Nev. Tire.

1,404,532—Peter T. Lehr, New York, New York. Pneumatic Tire.

1,404,391—Morton Harloe, Winchester, Va. Resilient Tire.

1,404,217—Lee Murray, Minneapolis, Minn., assignor to Durkee-Atwood Co., Minneapolis, Minn. Collapsible Vulcanizing Form.

1,404,847—Marius Greenspan, Chicago, Ill. Tire Mold.

1,404,949—Andrew J. Fleiter, Akron, Ohio. Apparatus For Curing Tires Under Internal Pressure.

1,404,942—Clarence J. Drope, Minneapolis, Minn., assignor to Derby Tire Co., Minneapolis, Minn. Vulcanizing Device.

1,407,470—Colin M. Logan, Newark, N. J., assignor to Heller Brothers Co., Newark, N. J. Art of Making Rings for Cutting Rubber and Other Material.

1,407,401—James I. Freeman and Leonard J. Peterson, Modesto, Calif. Pneumatic-Tire Casing.

1,407,159—John P. King, Providence, R. I., assignor of one-half to Leon E. Danforth, Providence, R. I. Method of Forming Tire Casings.

1,407,070—Franklin W. Kremer, Rutherford, N. J. Combined Pneumatic and Solid Tire.

1,407,355—Varney K. Sturges, Oakland, Calif. Method of Vulcanizing, and Core for Tire Molds.

1,407,178—John N. Stout and Edward E. Parsonage, Staunton, Ind. Sectional Pneumatic Tire.

1,407,193—August P. Diescher, Pittsburgh, Pa. Manufacture of Rubber Tires.

1,407,012—Thomas Branson, Philadelphia, Pa., assignor to Sibson & Stern, Inc., a corporation of Pennsylvania. Reenforcing Fabric for Vehicle Tires.

1,408,099—Henry P. Kraft, Ridgewood, N. J. Tire-Deflating Machine.

1,408,044—Knut O. B. Textorius, New York, N. Y., assignor to Tex Engineering Corp., New York, N. Y. Tire-Forming Core.

1,408,159—Hiram D. Ayres, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y. Tire-Testing Method and Machine.

1,407,756—Thomas H. Kip, New York, N. Y. Vehicle Tire.

1,407,967—Reginald H. Waters, Cumberland, Md., assignor to Kelly-Springfield Tire Co., New York, N. Y., a corporation of New Jersey. Vehicle Tire.

1,407,718—Harvey J. Bittaker, Akron, Ohio, assignor to The Firestone Tire and Rubber Co., Akron, Ohio. Expansible Core for Vulcanizing Tires.

1,407,839—James C. Clinefelter and Herbert Ries, Barberton, Ohio. Method for the Manufacture of Tires.

1,408,100—Frederick A. Krusemark, Roanoke, Va., assignor to K.F.&C. Tire & Rubber Co., Roanoke, Va. Mold For Making Cushion Tires.

1,407,771—William Reilly, Kerrisdale, New Brunswick, Canada. Vulcanizer.

1,408,382—Harry Edward Morriss, Enfield, England, assignor to Harvey Frost & Co., Ltd., London, England. Vulcanizing Apparatus.

Trade Marks Applied For

[The following are trade-mark applications pertinent to our field pending in the United States Patent Office which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade-Mark Company, Barrister Building, Washington, D. C. or Bush Building, 130 West 42 Street, New York, trade-mark specialists. As an additional service feature to its readers this Journal gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering.]

GIANT RED and crescent moon—No. 154,325. Revere Rubber Company, Providence, R. I., and Chelsea, Mass. For Machinery Packing Composed of Rubber and Fabric.

Picture of darky carrying large rubber stamp.—No. 152,178. Michael C. Lederer, Cleveland, Ohio. For Rubber Stamps and Marking Devices.

NACO within diamond over two circles in square—No. 154,928. Nott-Atwater Company, Spokane, Wash. For Rubber and Fabric Belting, Hose and Tires, Including Casings and Rubber Tubes, Patches and Inner Liners and Brake Linings.

F within disc between triangles—No. 154,497. The Fisk Rubber Company, Chicopee Falls, Mass. For Rubber Tires, Particularly the Outer Casings of Automobile Tires.

FOWLER with upper part F extended—No. 153,806. Fowler-Williams Co., Dallas, Tex. For Blow-Out Boots for Vehicle Tires.

DANDEE TUBE PATCH with picture of two figures pulling on tire within rectangle—No. 152,063. Frank H. Binninger, Cleveland, Ohio. For Tire-Tube Patches.

"FOR PEACE OF MIND"—No. 141,151. Automobile Owners' Tire Corporation, St. Paul, Minn. For Automobile Tires and Tubes of Rubber.

"SIERRA" above picture of mountain range within oval—No. 155,179. B. Lichtig & Son, Inc., Oakland, Calif. For rubber tires.

"JASCO" in white letters on black rectangle within semi-circle—No. 153,262. John A. Strimple, Janesville, Wisc. For tire pumps.

RACINE KLINGER—No. 148,951. Racine Rubber Company, Racine, Wisc. For Rubber or rubber and fabric tires and tubes for vehicles.

No. 144,038—Overseas Motor Service Corporation, New York, N. Y.

OVERSEAS, MOTOR SERVICE CORPORATION on panel across picture of two globes showing the hemispheres. For Accessory and Repair Devices and parts for Automobiles, Motor-driven trucks and similar self-propelled vehicles—namely, pneumatic, Cushion, solid, and sectional block; Nonmetallic tires made of rubber or combination of rubber and fabric; nonmetallic shoes, patches, plugs, and threads for such tires, and tire covers made from nonmetallic fabric material.

BUCKSKIN—No. 130,762. The Tuscan Tire & Rubber Company, Carrollton, Ohio. For Rubber Tires and Automobiles.

"LUBRIKUP" in white letters in black disc. Words "Williamsport" above and "PENNA., U.S.A." below, within a circle. No. 153,908. Williamsport Development Company, Williamsport, Pa. For composition packing composed of canvas and rubber.

SILVERTOWN—No. 151,158. The B. F. Goodrich Company, New York, N. Y. For Belts of Cord or Thread and Rubber Construction for Driving Automobile Fans and other Machinery.

"M. B." within oval—No. 146,839. Montgomery Bros. Inc., Philadelphia, Pa. For Steam and Hydraulic Packings Composed of Rubber, Asbestos, and Cotton.

PERPETUAL—No. 135,946. Perpetual Air Bag Co., Chicago, Ill. For Inflatable Air Bags Arranged to be Placed Inside of a Casing for the Purpose of Facilitating Vulcanization and Repair, Manufactured of Rubber and Fabric with Metal Fittings.

VA-CAR—No. 146,748. Virginia-Carolina Rubber Co., Inc., Richmond, Va. For Certain Named Tires, Tubes, Accessories for Same, Fan Belts, and Steam Packings.

New Incorporations

NEW YORK

Goodyear's India Rubber Selling Co., Inc., to manufacture and sell rubber goods, footwear, etc. $1,000. Principal office, New York City. Incorporators: S. H. Jones, 104 Oscar avenue, Forest Hills, Brooklyn, New York; R. B. Ostrander, 243 Lakeview avenue, Rockville Centre, Long Island, N. Y.; O. Borth, 21 Bennett avenue, New York.

Pax Elastic and Garter Co., Inc., to manufacture elastic goods. $2,000. Incorporators: H. B. Denner, 884 Whitlock avenue, New York City; J. O. Bilder, 427 St. John's Place, Brooklyn, New York; E. Lerner, 350 West 86th street, New York City.

Superior Distributing Corporation, to distribute tires, etc. $5,000. Principal office, Brooklyn, New York. Incorporators: T. F. Morris, 18 Seaview avenue, Far Rockaway, Long Island, New York; R. V. Reilly, 349 Lincoln Road and W. B. DeLacy, 1311 Newkirk avenue, Brooklyn, New York.

OHIO

The Wilhelm Tire Co., to manufacture and deal in tires. $5,000. Principal office, 47 Eleventh street, Toledo, Ohio. Incorporators: F. J., W. I., and A. A. Wilhelm, G. Oblinger, L. J. Schlenbach.

The True-Matic Tire and Tire Sales Co., to manufacture and sell tires. $150,000. Incorporators: David Klein. Principal office, Cleveland, Ohio.

The J. S. Williams Tire Co., to deal in automobile tires. $5,000. Incorporators: J. C. Spencer, Lamont Townsend, Clement T. Brown. Principal office, Cleveland, Ohio.

The Forest Tire Company, to manufacture tires. $5,000. Incorporators: Samuel J. Gottlieb, Adolph Z. Jaffe, Rudd H. Bender, Max M. Jaffee and V. C. Lynch.

CALIFORNIA

Puncture Proof Tire Co., to manufacture a new puncture proof tire. $100,000. Principal office, Los Angeles, Calif.

The Union Tire Co., to make and sell tires. $5,000. Incorporators: Frederick J. Swan, T. A. Baldwin, M. T. Simpson. Principal office, San Francisco, Calif.

DELAWARE

National Tire Stores, Inc., to deal in tires and auto accessories. $10,000. Agent: R. Wysong, Michigan City.

Climax Heel Co., to manufacture rubber heels. $10,000. Attorney: Corporation Service Co., Wilmington.

NEW JERSEY

Henry E. New, Inc., to deal in tires, tubes, etc. $1,000,000. Principal office, 41 N. 11th street, Newark, New Jersey.

MASSACHUSETTS

The Brockton Manufacturing Co., to manufacture and sell elastic goods. $25,000. Principal office, Brockton, Massachusetts. J. T. Shaw, president, 306 Spring street, Brockton, Massachusetts; W. W. Littlefield, treasurer, Avon, Massachusetts; F. A. Ling, director, 47 Highland Terrace, Brockton, Massachusetts.

Royal Tire Company, to manufacture tires. $50,000. Incorporators: David Miller, Samuel Miller and Harry Taber.

MARYLAND

The Provident Rubber Co., to manufacture tires, tubes, clothing, etc. $5,000. Incorporators: J. S. Soloman, Wilbur Seaman, Frank Hines and Thomas Burke.

TENNESSEE

The General Tire Company, to manufacture tires. $25,000. Incorporators: Wayne Murphy, Walter Pote, D. P. McEwen, W. H. Kirkpatrick and Byrd Douglas.

The Pneumatic Tire Co., to manufacture and deal in tires. $5,000. Incorporators: C. J. Thompson, L. C. Farrell, Thomas Corrigan. Principal office, Nashville, Tennessee.

TEXAS

The Bear Rubber Mills Corporation. $1,000,000. Principal office, San Antonio, Texas.

THE RUBBER AGE BUYERS GUIDE

ACCELERATORS
Harshaw, Fuller & Goodwin Co., The, Cleveland, O.
Rubber Service Laboratories Co., The, Akron, O.
States Metals Co., Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago.

ACCUMULATORS
Adamson Machine Co. Akron, O.
Akron Rubber Mold & Machine Co., Akron, O.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia, Conn.
Wellman - Seaver - Morgan Co., Cleveland, Ohio.

ACIDS
Harshaw, Fuller & Goodwin Co., Cleveland, O.
National Aniline & Chemical Co., Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago.

ACID TANKS
Birmingham Iron Foundry, Derby, Conn.
Devine, J. P., Co., Buffalo, N. Y.
Farrel Foundry & Machine Co., Ansonia, Conn.

AIR & STEAM METAL BAGS
Allsteel Ridewell Tire & Rubber Co., Dayton, Ohio.

AIR BRAKE HOSE
United States Rubber Co., New York.

AIR GOODS
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., Tuckahoe, N. Y.
United States Rubber Co., New York.

AIR MATTRESSES
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., Tuckahoe, N. Y.
United States Rubber Co., New York.

AIRPLANE AND BALLOON CLOTHS
United States Rubber Co., New York.
Hodgman Rubber Co., Tuckahoe, N. Y.

ALBA WHITING
Daigger, A., & Co., Chicago, Ill.
Harshaw, Fuller & Goodwin Co., Cleveland, O.
Industrial Chemical Co., New York.
Wishnick-Tumpeer Chemical Co., Chicago.

ALCOHOL
Harshaw, Fuller & Goodwin Co., Cleveland, O.
Tyler Patterson Co., Clev'd, O.
Wishnick-Tumpeer Chemical Co., Chicago.

ALUMINUM FILLER
Wishnick-Tumpeer Chemical Co., Chicago.

ALUMINUM FLAKE
Aluminum Flake Co., Akron, Ohio.
Butcher, L. H., Co., New York.
Fulper, Edward B., Trenton, N. J.
Harshaw, Fuller & Goodwin Co., Cleveland, O.
Rubber Service Laboratories Co., The, Akron, O.

AMMONIA AQUA
Laidlow, Kelly & Co., New York.
Tyler Patterson Co., Clev'd, O.
Wishnick-Tumpeer Chemical Co., Chicago.

ANGLE THERMOMETERS
Taylor Instrument Companies, Rochester, N. Y.

ANILINE OIL
Butcher, L. H., Co., New York.
Daigger, A., & Co., Chicago, Ill.
Fulper, Edward B., Trenton, N. J.
Klipstein, A., & Co., New York.
National Aniline & Chemical Co., Inc., New York.
Tyler Patterson Co., Clev'd, O.
Wishnick-Tumpeer Chemical Co., Chicago.

ANILINE OIL PLANTS
Devine, J. P., Co., Buffalo, N. Y.

ANTIMONY, SULPHURETS
Butcher, L. H., Co., New York.
Daigger, A., & Co., Chicago, Ill.
Fulper, Edward B., Trenton, N. J.
Harshaw, Fuller & Goodwin Co., Cleveland, O.
States Metals Co., Inc., New York.
Rare Metal Products Co., Belleville, N. J.
Tyler Patterson Co., Clev'd, O.
Typke & King, Mitcham, England.
Wishnick-Tumpeer Chemical Co., Chicago.

APRONS—RUBBER
Hodgman Rubber Co., Tuckahoe, N. Y.
Miller Rubber Co., Akron, Ohio.

ARTIFICIAL RUBBER
Carter Bell Mfg. Co., New York.
Stamford Rubber Supply Co., Stamford, Conn.

ASBESTINE
Butcher, L. H., Co., New York.
Daigger, A., & Co., Chicago, Ill.
Fulper, Edward B., Trenton, N. J.
Harshaw, Fuller & Goodwin Co., Cleveland, O.
Tyler Patterson Co., Clev'd, O.
Wishnick-Tumpeer Chemical Co., Chicago.

ATOMIZERS
The Rubber Products Co., Barberton, Ohio.

AUTOCLAVES
Devine, J. P., Co., Buffalo, N. Y.

AUTOMOBILE COATS
Hodgman Rubber Co., Tuckahoe, N. Y.
United States Rubber Co., New York.

AUTO TOP FABRICS
Hodgman Rubber Co., Tuckahoe, N. Y.
Taylor, Armitage & Eagles, Inc., New York.
Turner Co., J. Spencer, New York.
United States Rubber Co., New York.

BALATA
Wood, Charles E., New York.

BALATA FILM (Colorless)
Peters Bros. Rubber Co., N. Y.

BALLOON FABRICS
United States Rubber Co., New York.

H&G

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ANTIMONY SULPHURET

THE HARSHAW FULLER AND GOODWIN CO.

Cleveland
Chicago Philadelphia New York

H&G H&G

TRADE MARK RMP

A New Antimony

We invite your attention to a recent addition to our standard grades of Antimony Sulphuret.

NO. 7A

Pure Antimony Pentasulphide containing 15-17% free sulphur.

Seven reasons why you should use this product.

1. It is free from Calcium Sulphate.
2. It will give a smoother texture.
3. It has the greatest covering power.
4. It will stand higher temperatures.
5. It will give a beautiful orange red color - the one most popular with the consumer.
6. It will give a non blooming stock, - hence the minimum amount of uncombined free sulphur - therefore better aging.
7. It is inexpensive.

Samples and quotations upon request.

RARE METAL PRODUCTS COMPANY
BELLEVILLE, NEW JERSEY.

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BALLOONS, TOY
Miller Rubber Co., Akron, Ohio.

BALLOONS, TOY, DYES FOR
National Aniline & Chemical Co., Inc., New York.

BALLS, DOLLS AND TOYS
Davol Rubber Co., Providence, R. I.
Essex Rubber Co., Trenton, N. J.
Miller Rubber Co., Akron, Ohio.
New York Rubber Co., New York.
United States Rubber Co., New York.

BALSAM FIR
Butcher, L. H., Co., New York.

BANBURY AUTOMATIC RUBBER MIXER
Birmingham Iron Foundry, Derby, Conn.

BAND CUTTING MACHINES
Adamson Machine Co., Akron, O.
Birmingham Iron Foundry, Derby, Conn.

BARBERS' BIBS
Canfield, H. O., Co., Bridgeport, Conn.
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., Tuckahoe, N. Y.
Miller Rubber Co., Akron, Ohio.
United States Rubber Co., New York.

BARIUM DUST
Vanderbilt, R. T., Co., New York.
Wishnick-Tumpeer Chemical Co., Chicago.

BARIUM SULPHATE
Butcher, L. H., Co., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, O.
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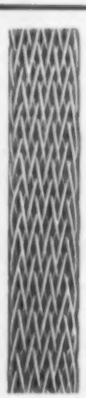

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Die Sinking & Machine Co., The, Akron, Ohio.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Kuhlke Machine Co., Akron, Ohio.
Mechanical Mold & Machine Co., The, Akron, Ohio.
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Tyler Patterson Co., Clev'd, O.
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Liebstein, T. B., Newark, N. J.
Muehlsein, H., & Co., New York.

SECTIONAL AIR BAGS
Miller Rubber Co., Akron, Ohio.

SEWING MACHINE RUBBERS
Canfield, H. O., Co., Bridgeport, Conn.

SHAFTING
Adamson Machine Co., Akron, O.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia, Conn.
Vaughn Machinery Co., Cuyahoga Falls, Ohio.
Wellman - Seaver - Morgan Co., Cleveland, Ohio.

SHEETING
Brander & Curry, Inc., New York
Lane, J. H., & Co., New York.
Turner, J. Spencer Co., New York.

SHELLS—STEEL CALENDER STOCK
Gammeter, W. F., Co., Cadiz, Ohio.

SHELVING—STEEL
David Lupton Sons Co., Phila., Pa.

SHERARDIZING
New Haven Sherardizing Co., Hartford, Conn.

SHOWER BATH SPRINKLERS
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., Tuckahoe, N. Y.
Schrader's, A., Son, Inc., New York.
Seamless Rubber Co., Inc., New Haven, Conn.

SILICA
Daigger, A., & Co., Chicago, Ill.
Tyler Patterson Co., Clev'd, O.
Wishnick-Tumpeer Chemical Co., Chicago.

SKIVING MACHINES
Allen Machine Co., Erie, Pa.
United Shoe Machinery Corp., Boston, Mass.

SOAPSTONE
Binney & Smith Co., New York.
Butcher, L. H., Co., New York.
Daigger, A., & Co., Chicago, Ill.
Fulper, Edward B., Trenton, N. J.
Harshaw, Fuller & Goodwin Co., Cleveland, O.
Tyler Patterson Co., Clev'd, O.
Wishnick-Tumpeer Chemical Co., Chicago.

SOLVENT RECOVERY APPARATUS
Benzine Condensation Co., New York.
Devine, J. P., Co., Buffalo, N. Y.

SPONGES
Miller Rubber Co., Akron, Ohio.
United States Rubber Co., New York.

SPORTING GOODS
Essex Rubber Co., Trenton, N. J.
Goodrich, B. F., Co., Akron, O.
Hodgman Rubber Co., Tuckahoe, N. Y.
United States Rubber Co., New York.

SPREADERS
Adamson Machine Co., Akron, O.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia, Conn.
Vaughn Machinery Co., Cuyahoga Falls, Ohio.

STAMP GUM
Goodrich, B. F., Co., Akron, O.
Miller Rubber Co., Akron, Ohio.

STATIONERS, SUPPLIES
Davol Rubber Co., Providence, R. I.
Goodrich, B. F., Co., Akron, O.
Hodgman Rubber Co., Tuckahoe, N. Y.
Miller Rubber Co., Akron, Ohio.
United States Rubber Co., New York.

STEEL STAMPS
Hoggson & Pettis Mfg. Co., New Haven, Conn.

STITCHERS
Akron Rubber Mold & Machine Co., Akron, O.
Hoggson & Pettis Mfg. Co., New Haven, Conn.

STOPPLES—METAL
Schrader's, A., Son, Inc., New York.

STOPPLES—RUBBER
Canfield, H. O., Co., Bridgeport, Conn.
Davidson Rubber Co.,, Boston Mass.
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., Tuckahoe, N. Y.
Biggs Boiler Works Co., Akron, O.

STRAINING MACHINES
Allen Machine Co., Erie, Pa.

STRIP CUTTERS
Birmingham Iron Foundry, Derby, Conn.
Spadone Machine Co., New York.

SUBMARINE OUTFITS
Hodgman Rubber Co., Tuckahoe, N. Y.
Schrader's, A., Son, Inc., New York.

SUBLIMED WHITE LEAD
Butcher, L. H., Co., New York.
Tyler Patterson Co., Clev'd, O.
Wishnick-Tumpeer Chemical Co., Chicago.